



American Cyanamid Company

Chemicals Group
Toxicology and Product Safety Department
One Cyanamid Plaza
Wayne, NJ 07470
Fax: 201-831-3400

CONTAINS NO CBI

90-890000401

CERTIFIED MAIL

June 28, 1989

Document Processing Center
Office of Toxic Substances (TS-790)
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

Attention: CAIR Reporting Office

Gentlemen:

Enclosed is a completed CAIR form for 1988 processing of toluene diisocyanate [CAS 26471-62-5] for American Cyanamid Company, East Main Street, Bridgewater, New Jersey 08807.

This form is being submitted in response to the Federal Register notices of December 22, 1988 and February 15, 1989. There are no claims of confidential business information.

Sincerely,

Joan L. Gallagher

Joan L. Gallagher, Manager
TSCA Compliance and
International Registrations
Toxicology & Product Safety Dept.

JLG:mj
jg30

89 JUL -5 AM 9:46
U.S. DEPT. OF JUSTICE
OFFICE

CONTAINS NO CBI



Form Approved
OMB No. 2010-0019
Approval Expires 12-31-89

EPA-OTS



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90-890000 401

90 JUL -5 AM 9:16
OFFICE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Comprehensive Assessment Information Rule
REPORTING FORM

When completed, send this form to:

Document Processing Center
Office of Toxic Substances, TS-790
U.S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460
Attention: CAIR Reporting Office

For Agency Use Only:

Date of Receipt: _____

Document
Control Number: _____

Docket Number: _____

SECTION 1 GENERAL MANUFACTURER, IMPORTER, AND PROCESSOR INFORMATION

PART A GENERAL REPORTING INFORMATION

1.01 This Comprehensive Assessment Information Rule (CAIR) Reporting Form has been completed in response to the Federal Register Notice of..... [1][2] [2][2] [8][8]
CBI mo. day year

☐ a. If a Chemical Abstracts Service Number (CAS No.) is provided in the Federal Register, list the CAS No. [] [2] [6] [4] [7] [1] -[6] [2] -[5]

b. If a chemical substance CAS No. is not provided in the Federal Register, list either (i) the chemical name, (ii) the mixture name, or (iii) the trade name of the chemical substance as provided in the Federal Register.

(i) Chemical name as listed in the rule

(ii) Name of mixture as listed in the rule

(iii) Trade name as listed in the rule

c. If a chemical category is provided in the Federal Register, report the name of the category as listed in the rule, the chemical substance CAS No. you are reporting on which falls under the listed category, and the chemical name of the substance you are reporting on which falls under the listed category.

Name of category as listed in the rule

CAS No. of chemical substance [] [] [] [] [] [] -[] [] -[] []

Name of chemical substance

1.02 Identify your reporting status under CAIR by circling the appropriate response(s).

CBI Manufacturer 1

☐ Importer 2

Processor 3

X/P manufacturer reporting for customer who is a processor 4

X/P processor reporting for customer who is a processor 5

☐ Mark (X) this box if you attach a continuation sheet.

1.03 Does the substance you are reporting on have an "x/p" designation associated with it in the above-listed Federal Register Notice?

CBI

☒ Yes ☒ Go to question 1.04
☐ No ☐ Go to question 1.05

1.04 a. Do you manufacture, import, or process the listed substance and distribute it under a trade name(s) different than that listed in the Federal Register Notice? Circle the appropriate response.

CBI

☐ Yes 1
☒ No 2

b. Check the appropriate box below:

☐ You have chosen to notify your customers of their reporting obligations

Provide the trade name(s)

☐ You have chosen to report for your customers

☒ You have submitted the trade name(s) to EPA one day after the effective date of the rule in the Federal Register Notice under which you are reporting.

1.05 If you buy a trade name product and are reporting because you were notified of your reporting requirements by your trade name supplier, provide that trade name.

CBI

Trade name

☐ Is the trade name product a mixture? Circle the appropriate response.

Yes 1

No 2

1.06 Certification -- The person who is responsible for the completion of this form must sign the certification statement below:

CBI

☐ "I hereby certify that, to the best of my knowledge and belief, all information entered on this form is complete and accurate."

Karel F. Bernady

NAME

Karel F. Bernady

SIGNATURE

5/22/89

DATE SIGNED

Plant Manager

TITLE

(201) 560 - 2034

TELEPHONE NO.

☐ Mark (X) this box if you attach a continuation sheet.

1.07 Exemptions From Reporting -- If you have provided EPA or another Federal agency with the required information on a CAIR Reporting Form for the listed substance within the past 3 years, and this information is current, accurate, and complete for the time period specified in the rule, then sign the certification below. You CBI ☐ are required to complete section 1 of this CAIR form and provide any information now required but not previously submitted. Provide a copy of any previous submissions along with your Section 1 submission.

"I hereby certify that, to the best of my knowledge and belief, all required information which I have not included in this CAIR Reporting Form has been submitted to EPA within the past 3 years and is current, accurate, and complete for the time period specified in the rule."

_____ NAME	_____ SIGNATURE	_____ DATE SIGNED
_____ TITLE	(_____)_____ TELEPHONE NO.	_____ DATE OF PREVIOUS SUBMISSION

1.08 CBI Certification -- If you have asserted any CBI claims in this report you must certify that the following statements truthfully and accurately apply to all of those confidentiality claims which you have asserted.

CBI ☐ "My company has taken measures to protect the confidentiality of the information, and it will continue to take these measures; the information is not, and has not been, reasonably ascertainable by other persons (other than government bodies) by using legitimate means (other than discovery based on a showing of special need in a judicial or quasi-judicial proceeding) without my company's consent; the information is not publicly available elsewhere; and disclosure of the information would cause substantial harm to my company's competitive position."

_____ NAME	_____ SIGNATURE	_____ DATE SIGNED
_____ TITLE	(_____)_____ TELEPHONE NO.	

☐ Mark (X) this box if you attach a continuation sheet.

1.09 Facility Identification

1.10 Company Headquarters Identification

☐ Mark (X) this box if you attach a continuation sheet.

[illegible]

CBI Name [J][O]A[N][][L][][G]A[L][L]A[G][H]E[R][][][][][][][][][][][][][][][]
[][] Title [M]K[R][][T]S[C]A[][C]O[M]P[L]I[A]N[C]E&[I]N[T]L[R]G
Address [O]N[E][][C]Y[A]N[A]M[I]D[][P]L[A]Z[A][][][][][][][][][][][][][][][]
 Street

 [W]A[Y]N[E][]
 City

 [N]J [0]7[4]7[0]--([][][][][]) Zip
 State

Telephone Number [2]0[1]-[8]3[1]-[3]4[1]6

☐ Mark (X) this box if you attach a continuation sheet.

- NOT APPLICABLE -

Street

City

State

Zip

Mo.

Day

Year

Telephone Number() () () - () () () - () () () ()

- NOT APPLICABLE -

Street

City

State

Zip

Mo.

Day

Year

Telephone Number[] [] [] - [] [] [] - [] [] [] []

8

1.16 For each classification listed below, state the quantity of the listed substance that was manufactured, imported, or processed at your facility during the reporting year.

CBI

<u>Classification</u>	<u>Quantity (kg/yr)</u>
<input type="checkbox"/> Manufactured	0.0
Imported	0.0
Processed (include quantity repackaged)	529,919.1
Of that quantity manufactured or imported, report that quantity:	
In storage at the beginning of the reporting year	0
For on-site use or processing	0
For direct commercial distribution (including export)	0
In storage at the end of the reporting year	0
Of that quantity processed, report that quantity:	
In storage at the beginning of the reporting year	25,028.6
Processed as a reactant (chemical producer)	529,919.1
Processed as a formulation component (mixture producer)	0.0
Processed as an article component (article producer)	0.0
Repackaged (including export)	0.0
In storage at the end of the reporting year	29,018.6

☐ Mark (X) this box if you attach a continuation sheet.

1.17 Mixture -- If the listed substance on which you are required to report is a mixture or a component of a mixture, provide the following information for each component chemical. (If the mixture composition is variable, report an average percentage of each component chemical for all formulations.)

[]

Component Name	Supplier Name	Average % Composition by Weight (specify precision, e.g., 45% ± 0.5%)
- NOT APPLICABLE -		
Total		100%

10

2.04 State the quantity of the listed substance that your facility manufactured, imported, or processed during the 3 corporate fiscal years preceding the reporting year in descending order.

CBI

<input type="checkbox"/>	Year ending	<input type="text" value="1"/> <input type="text" value="2"/> Mo.	<input type="text" value="8"/> <input type="text" value="7"/> Year
Quantity manufactured		N/A	kg
Quantity imported		N/A	kg
Quantity processed		460,429.5	kg
Year ending	<input type="text" value="1"/> <input type="text" value="2"/> Mo.	<input type="text" value="8"/> <input type="text" value="6"/> Year	
Quantity manufactured		N/A	kg
Quantity imported		N/A	kg
Quantity processed		473,999.1	kg
Year ending	<input type="text" value="1"/> <input type="text" value="2"/> Mo.	<input type="text" value="8"/> <input type="text" value="5"/> Year	
Quantity manufactured		N/A	kg
Quantity imported		N/A	kg
Quantity processed		446,629.5	kg

2.05 Specify the manner in which you manufactured the listed substance. Circle all appropriate process types.

CBI

- NOT APPLICABLE -

<input type="checkbox"/>	Continuous process	1
	Semicontinuous process	2
	Batch process	3

☐ Mark (X) this box if you attach a continuation sheet.

2.06 Specify the manner in which you processed the listed substance. Circle all
CBI appropriate process types.

- ☐ Continuous process 1
Semicontinuous process 2
Batch process 3

2.07 State your facility's name-plate capacity for manufacturing or processing the listed
CBI substance. (If you are a batch manufacturer or batch processor, do not answer this
question.)

- ☐ Manufacturing capacity kg/yr
Processing capacity kg/yr

2.08 If you intend to increase or decrease the quantity of the listed substance
CBI manufactured, imported, or processed at any time after your current corporate fiscal
year, estimate the increase or decrease based upon the reporting year's production
volume.

<input type="checkbox"/>	Manufacturing Quantity (kg)	Importing Quantity (kg)	Processing Quantity (kg)
Amount of increase			
Amount of decrease			

- NO CHANGE - SAME QUANTITY TO BE PROCESSED -

☐ Mark (X) this box if you attach a continuation sheet.

2.09 For the three largest volume manufacturing or processing process types involving the listed substance, specify the number of days you manufactured or processed the listed substance during the reporting year. Also specify the average number of hours per day each process type was operated. (If only one or two operations are involved, list those.)

CBI

☐

Days/Year Average
Hours/Day

Process Type #1 (The process type involving the largest quantity of the listed substance.)

Manufactured	_____	_____
Processed	336	24

Process Type #2 (The process type involving the 2nd largest quantity of the listed substance.)

Manufactured	_____	_____
Processed	_____	_____

Process Type #3 (The process type involving the 3rd largest quantity of the listed substance.)

Manufactured	_____	_____
Processed	_____	_____

2.10 State the maximum daily inventory and average monthly inventory of the listed substance that was stored on-site during the reporting year in the form of a bulk chemical.

CBI

☐

Maximum daily inventory	_____	kg
Average monthly inventory	_____	kg

☐ Mark (X) this box if you attach a continuation sheet.

2.11 Related Product Types -- List any byproducts, coproducts, or impurities present with the listed substance in concentrations greater than 0.1 percent as it is manufactured, imported, or processed. The source of byproducts, coproducts, or impurities means the source from which the byproducts, coproducts, or impurities are made or introduced into the product (e.g., carryover from raw material, reaction product, etc.).

CBI

☐

- NONE -

<u>CAS No.</u>	<u>Chemical Name</u>	<u>Byproduct, Coproduct or Impurity¹</u>	<u>Concentration (%) (specify \pm % precision)</u>	<u>Source of Byproducts, Coproducts, or Impurities</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

¹Use the following codes to designate byproduct, coproduct, or impurity:

B = Byproduct

C = Coproduct

I = Impurity

☐ Mark (X) this box if you attach a continuation sheet.

- 2.12 Existing Product Types -- List all existing product types which you manufactured, imported, or processed using the listed substance during the reporting year. List the quantity of listed substance you use for each product type as a percentage of the total volume of listed substance used during the reporting year. Also list the quantity of listed substance used captively on-site as a percentage of the value listed under column b., and the types of end-users for each product type. (Refer to ☐ the instructions for further explanation and an example.)

CBI

☐

a. Product Types ¹	b. % of Quantity Manufactured, Imported, or Processed	c. % of Quantity Used Captively On-Site	d. Type of End-Users ²
L	100%	100%	I

¹Use the following codes to designate product types:

A = Solvent	L = Moldable/Castable/Rubber and additives
B = Synthetic reactant	M = Plasticizer
C = Catalyst/Initiator/Accelerator/ Sensitizer	N = Dye/Pigment/Colorant/Ink and additives
D = Inhibitor/Stabilizer/Scavenger/ Antioxidant	O = Photographic/Reprographic chemical and additives
E = Analytical reagent	P = Electrodeposition/Plating chemicals
F = Chelator/Coagulant/Sequestrant	Q = Fuel and fuel additives
G = Cleanser/Detergent/Degreaser	R = Explosive chemicals and additives
H = Lubricant/Friction modifier/Antiwear agent	S = Fragrance/Flavor chemicals
I = Surfactant/Emulsifier	T = Pollution control chemicals
J = Flame retardant	U = Functional fluids and additives
K = Coating/Binder/Adhesive and additives	V = Metal alloy and additives
	W = Rheological modifier
	X = Other (specify) _____

²Use the following codes to designate the type of end-users:

I = Industrial	CS = Consumer
CM = Commercial	H = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

- 2.13 Expected Product Types -- Identify all product types which you expect to manufacture, import, or process using the listed substance at any time after your current corporate fiscal year. For each use, specify the quantity you expect to manufacture, import, or process for each use as a percentage of the total volume of listed substance used during the reporting year. Also list the quantity of listed substance used captively on-site as a percentage of the value listed under column b., and the types of end-users for each product type. (Refer to the instructions for further explanation and an example.)

CBI

☐

a.	b.	c.	d.
Product Types ¹	% of Quantity Manufactured, Imported, or Processed	% of Quantity Used Captively On-Site	Type of End-Users ²
L	100%	100%	I

¹Use the following codes to designate product types:

A = Solvent	L = Moldable/Castable/Rubber and additives
B = Synthetic reactant	M = Plasticizer
C = Catalyst/Initiator/Accelerator/ Sensitizer	N = Dye/Pigment/Colorant/Ink and additives
D = Inhibitor/Stabilizer/Scavenger/ Antioxidant	O = Photographic/Reprographic chemical and additives
E = Analytical reagent	P = Electrodeposition/Plating chemicals
F = Chelator/Coagulant/Sequestrant	Q = Fuel and fuel additives
G = Cleanser/Detergent/Degreaser	R = Explosive chemicals and additives
H = Lubricant/Friction modifier/Antiwear agent	S = Fragrance/Flavor chemicals
I = Surfactant/Emulsifier	T = Pollution control chemicals
J = Flame retardant	U = Functional fluids and additives
K = Coating/Binder/Adhesive and additives	V = Metal alloy and additives
	W = Rheological modifier
	X = Other (specify) _____

²Use the following codes to designate the type of end-users:

I = Industrial	CS = Consumer
CM = Commercial	H = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

2.14 Final Product -- Complete the following table for each type of final product manufactured, imported, or processed at your facility that contains the listed substance other than as an impurity.

☐

a.	b.	c.	d.
Product Type ¹	Final Product's Physical Form ²	Average % Composition of Listed Substance in Final Product	Type of End-Users ³
L	B	0.65%	I

¹Use the following codes to designate product types:

A = Solvent	L = Moldable/Castable/Rubber and additives
B = Synthetic reactant	M = Plasticizer
C = Catalyst/Initiator/Accelerator/Sensitizer	N = Dye/Pigment/Colorant/Ink and additives
D = Inhibitor/Stabilizer/Scavenger/Antioxidant	O = Photographic/Reprographic chemical and additives
E = Analytical reagent	P = Electrodeposition/Plating chemicals
F = Chelator/Coagulant/Sequestrant	Q = Fuel and fuel additives
G = Cleanser/Detergent/Degreaser	R = Explosive chemicals and additives
H = Lubricant/Friction modifier/Antiwear agent	S = Fragrance/Flavor chemicals
I = Surfactant/Emulsifier	T = Pollution control chemicals
J = Flame retardant	U = Functional fluids and additives
K = Coating/Binder/Adhesive and additives	V = Metal alloy and additives
	W = Rheological modifier
	X = Other (specify) _____

²Use the following codes to designate the final product's physical form:

A = Gas	F2 = Crystalline solid
B = Liquid	F3 = Granules
C = Aqueous solution	F4 = Other solid
D = Paste	G = Gel
E = Slurry	H = Other (specify) _____
F1 = Powder	

³Use the following codes to designate the type of end-users:

I = Industrial	CS = Consumer
CM = Commercial	H = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

2.15 Circle all applicable modes of transportation used to deliver bulk shipments of the
CBI listed substance to off-site customers.

☐ Truck 1
Railcar 2
Barge, Vessel 3
Pipeline 4
Plane 5
Other (specify) _____ 6

2.16 Customer Use -- Estimate the quantity of the listed substance used by your customers
CBI or prepared by your customers during the reporting year for use under each category
of end use listed (i-iv).

☐

Category of End Use

i. Industrial Products

Chemical or mixture kg/yr
Article 7,407 kg/yr

ii. Commercial Products

Chemical or mixture kg/yr
Article kg/yr

iii. Consumer Products

Chemical or mixture kg/yr
Article kg/yr

iv. Other

Distribution (excluding export) kg/yr
Export kg/yr
Quantity of substance consumed as reactant kg/yr
Unknown customer uses 73,695 kg/yr

☐ Mark (X) this box if you attach a continuation sheet.

SECTION 3 PROCESSOR RAW MATERIAL IDENTIFICATION

PART A GENERAL DATA

- 3.01 Specify the quantity purchased and the average price paid for the listed substance for each major source of supply listed. Product trades are treated as purchases.
CBI The average price is the market value of the product that was traded for the listed substance.

☐

<u>Source of Supply</u>	<u>Quantity (kg)</u>	<u>Average Price (\$/kg)</u>
The listed substance was manufactured on-site.		
The listed substance was transferred from a different company site.		
The listed substance was purchased directly from a manufacturer or importer.	534,545	2.20
The listed substance was purchased from a distributor or repackager.		
The listed substance was purchased from a mixture producer.		

- 3.02 Circle all applicable modes of transportation used to deliver the listed substance to your facility.

☐

Truck	1
Railcar	2
Barge, Vessel	3
Pipeline	4
Plane	5
Other (specify) _____	6

☐ Mark (X) this box if you attach a continuation sheet.

3.03 a. Circle all applicable containers used to transport the listed substance to your facility.
CBI

☐

Bags 1
Boxes 2
Free standing tank cylinders 3
Tank rail cars 4
Hopper cars 5
Tank trucks 6
Hopper trucks 7
Drums 8
Pipeline 9
Other (specify) _____ 10

b. If the listed substance is transported in pressurized tank cylinders, tank rail cars, or tank trucks, state the pressure of the tanks.

Tank cylinders mmHg
Tank rail cars mmHg
Tank trucks mmHg

☐ Mark (X) this box if you attach a continuation sheet.

PART B RAW MATERIAL IN THE FORM OF A MIXTURE

3.04 If you obtain the listed substance in the form of a mixture, list the trade name(s) of the mixture, the name of its supplier(s) or manufacturer(s), an estimate of the average percent composition by weight of the listed substance in the mixture, and the amount of mixture processed during the reporting year.

CBI

☐

- NOT APPLICABLE -

<u>Trade Name</u>	<u>Supplier or Manufacturer</u>	<u>Average % Composition by Weight (specify \pm % precision)</u>	<u>Amount Processed (kg/yr)</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

☐ Mark (X) this box if you attach a continuation sheet.

PART C RAW MATERIAL VOLUME

3.05 State the quantity of the listed substance used as a raw material during the
CBI reporting year in the form of a class I chemical, class II chemical, or polymer, and
the percent composition, by weight, of the listed substance.

☐

	Quantity Used (kg/yr)	% Composition by Weight of Listed Sub- stance in Raw Material (specify \pm % precision)
Class I chemical	529,919.1	100%
		(% Precision unknown)
Class II chemical		
Polymer		

☐ Mark (X) this box if you attach a continuation sheet.

SECTION 4 PHYSICAL/CHEMICAL PROPERTIES

General Instructions:

If you are reporting on a mixture as defined in the glossary, reply to questions in Section 4 that are inappropriate to mixtures by stating "NA -- mixture."

For questions 4.06-4.15, if you possess any hazard warning statement, label, MSDS, or other notice that addresses the information requested, you may submit a copy or reasonable facsimile in lieu of answering those questions which it addresses.

PART A PHYSICAL/CHEMICAL DATA SUMMARY

- 4.01 Specify the percent purity for the three major¹ technical grade(s) of the listed substance as it is manufactured, imported, or processed. Measure the purity of the substance in the final product form for manufacturing activities, at the time you import the substance, or at the point you begin to process the substance.

CBI

☐

	<u>Manufacture</u>	<u>Import</u>	<u>Process</u>
Technical grade #1	<u>N/A</u> % purity	<u>N/A</u> % purity	<u>100</u> % purity
Technical grade #2	<u> </u> % purity	<u> </u> % purity	<u> </u> % purity
Technical grade #3	<u> </u> % purity	<u> </u> % purity	<u> </u> % purity

¹Major = Greatest quantity of listed substance manufactured, imported or processed.

- 4.02 Submit your most recently updated Material Safety Data Sheet (MSDS) for the listed substance, and for every formulation containing the listed substance. If you possess an MSDS that you developed and an MSDS developed by a different source, submit your version. Indicate whether at least one MSDS has been submitted by circling the appropriate response.

Yes ①

No 2

Indicate whether the MSDS was developed by your company or by a different source.

Your company ①

Another source ②

☒ Mark (X) this box if you attach a continuation sheet.

- 4.03 Submit a copy or reasonable facsimile of any hazard information (other than an MSDS) that is provided to your customers/users regarding the listed substance or any formulation containing the listed substance. Indicate whether this information has been submitted by circling the appropriate response.

Yes 1

No 2

- 4.04 For each activity that uses the listed substance, circle all the applicable number(s) corresponding to each physical state of the listed substance during the activity listed. Physical states for importing and processing activities are determined at the time you import or begin to process the listed substance. Physical states for manufacturing, storage, disposal and transport activities are determined using the final state of the product.

CBI

☐

Activity	Physical State				
	Solid	Slurry	Liquid	Liquified Gas	Gas
Manufacture	1	2	3	4	5
Import	1	2	3	4	5
Process	1	2	3	4	5
Store	1	2	3	4	5
Dispose		2	3	4	5
Transport	1	2	3	4	5

☒ Mark (X) this box if you attach a continuation sheet.

- 4.05 Particle Size -- If the listed substance exists in particulate form during any of the following activities, indicate for each applicable physical state the size and the percentage distribution of the listed substance by activity. Do not include particles ≥ 10 microns in diameter. Measure the physical state and particle sizes for importing and processing activities at the time you import or begin to process the listed substance. Measure the physical state and particle sizes for manufacturing storage, disposal and transport activities using the final state of the product.

CBI

☐

- NOT APPLICABLE -

<u>Physical State</u>		<u>Manufacture</u>	<u>Import</u>	<u>Process</u>	<u>Store</u>	<u>Dispose</u>	<u>Transport</u>
Dust	<1 micron						
	1 to <5 microns						
	5 to <10 microns						
Powder	<1 micron						
	1 to <5 microns						
	5 to <10 microns						
Fiber	<1 micron						
	1 to <5 microns						
	5 to <10 microns						
Aerosol	<1 micron						
	1 to <5 microns						
	5 to <10 microns						

☐ Mark (X) this box if you attach a continuation sheet.

SECTION 5 ENVIRONMENTAL FATE

PART A RATE CONSTANTS AND TRANSFORMATION PRODUCTS

5.01 Indicate the rate constants for the following transformation processes.

a. Photolysis:

Absorption spectrum coefficient (peak) UK (1/M cm) at UK nm

Reaction quantum yield, ϕ UK at nm

Direct photolysis rate constant, k_p , at ... UK 1/hr latitude

b. Oxidation constants at 25°C:

For 1O_2 (singlet oxygen), k_{ox} UK 1/M hr

For RO_2 (peroxy radical), k_{ox} UK 1/M hr

c. Five-day biochemical oxygen demand, BOD_5 ... UK mg/l

d. Biotransformation rate constant:

For bacterial transformation in water, k_b ... UK 1/hr

Specify culture UK

e. Hydrolysis rate constants:

For base-promoted process, k_b UK 1/M hr

For acid-promoted process, k_A UK 1/M hr

For neutral process, k_N UK 1/hr

f. Chemical reduction rate (specify conditions) UK

g. Other (such as spontaneous degradation) ... UK

☐ Mark (X) this box if you attach a continuation sheet.

PART B PARTITION COEFFICIENTS

5.02 a. Specify the half-life of the listed substance in the following media.

<u>Media</u>	<u>Half-life (specify units)</u>
Groundwater	UK
Atmosphere	UK
Surface water	UK
Soil	UK

b. Identify the listed substance's known transformation products that have a half-life greater than 24 hours.

<u>CAS No.</u>	<u>Name</u>	<u>Half-life (specify units)</u>	<u>Media</u>
UK	UK	UK	in UK
			in
			in
			in

5.03 Specify the octanol-water partition coefficient, K_{ow} ... UK at 25°C
 Method of calculation or determination

5.04 Specify the soil-water partition coefficient, K_d UK at 25°C
 Soil type

5.05 Specify the organic carbon-water partition coefficient, K_{oc} UK at 25°C

5.06 Specify the Henry's Law Constant, H UK atm-m³/mole

☐ Mark (X) this box if you attach a continuation sheet.

5.07 List the bioconcentration factor (BCF) of the listed substance, the species for which it was determined, and the type of test used in deriving the BCF.

<u>Bioconcentration Factor</u>	<u>Species</u>	<u>Test</u> ¹
UK	UK	UK

¹Use the following codes to designate the type of test:

F = Flowthrough

S = Static

☐ Mark (X) this box if you attach a continuation sheet.

6.04 For each market listed below, state the quantity sold and the total sales value of the listed substance sold or transferred in bulk during the reporting year.

☐

<u>Market</u>	<u>Quantity Sold or Transferred (kg/yr)</u>	<u>Total Sales Value (\$/yr)</u>
Retail sales	_____	_____
Distribution -- Wholesalers	_____	_____
Distribution -- Retailers	_____	_____
Intra-company transfer	_____	_____
Repackagers	_____	_____
Mixture producers	_____	_____
Article producers	_____	_____
Other chemical manufacturers or processors	_____	_____
Exporters	_____	_____
Other (specify)	_____	_____
_____	_____	_____

6.05 Substitutes -- List all known commercially feasible substitutes that you know exist for the listed substance and state the cost of each substitute. A commercially feasible substitute is one which is economically and technologically feasible to use in your current operation, and which results in a final product with comparable performance in its end uses.

CBI

☐

<u>Substitute</u>	<u>Cost (\$/kg)</u>
No known substitutes	_____
_____	_____
_____	_____
_____	_____

☐ Mark (X) this box if you attach a continuation sheet.

SECTION 7 MANUFACTURING AND PROCESSING INFORMATION

General Instructions:

For questions 7.04-7.06, provide a separate response for each process block flow diagram provided in questions 7.01, 7.02, and 7.03. Identify the process type from which the information is extracted.

PART A MANUFACTURING AND PROCESSING PROCESS TYPE DESCRIPTION

7.01 In accordance with the instructions, provide a process block flow diagram showing the major (greatest volume) process type involving the listed substance.

CBI

☐ Process type Polyurethane Addition Polymerization

See attached diagram

☒ Mark (X) this box if you attach a continuation sheet.

7.03 In accordance with the instructions, provide a process block flow diagram showing all process emission streams and emission points that contain the listed substance and which, if combined, would total at least 90 percent of all facility emissions if not treated before emission into the environment. If all such emissions are released from one process type, provide a process block flow diagram using the instructions for question 7.01. If all such emissions are released from more than one process type, provide a process block flow diagram showing each process type as a separate block.

CBI

☐ Process type Polyurethane Addition Polymerization

- Same Diagram as Question 7.01 -

☐ Mark (X) this box if you attach a continuation sheet.

7.04 Describe the typical equipment types for each unit operation identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type Polyurethane Addition Polymerization

Unit Operation ID Number	Typical Equipment Type	Operating Temperature Range (°C)	Operating Pressure Range (mm Hg)	Vessel Composition
7.1	Storage tank	Ambient	Atmospheric	stainless steel
7.2	Storage tank	50-120°C	Atmospheric	stainless steel
7.3	Weigh tank	Ambient	Atmospheric	stainless steel
7.4	Weigh tank	50-120°C	Atmospheric	stainless steel
7.5	Reactor	25-100°C	Atmospheric	stainless steel
7.6	Holding tank	25-100°C	Atmospheric	stainless steel
7.7	Thin film Evaporator	25-160°C	< 0.1mm	stainless steel
7.8	Condenser	25-160°C	< 0.1mm	stainless steel
7.9	Vacuum Receiver	Ambient	< 0.1mm	stainless steel
7.10	Steam Jets	0-100°C	< 0.1mm	stainless steel
7.11	Kettle	0-100°C	Atmospheric	stainless steel
7.12	Steel Mesh Filter	0-80°C	5168mm	stainless steel
7.13	Tank	0-80°C	Atmospheric	stainless steel

☐ Mark (X) this box if you attach a continuation sheet.

7.05 Describe each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type Polyurethane Addition Polymerization

Process Stream ID Code	Process Stream Description	Physical State ¹	Stream Flow (kg/yr)
7a	TDI from Tank Wagon	OL	533,909
7b	Diol from Tank Wagon (No TDI)	OL	1,559,050
7c	TDI from storage	OL	529,919
7d	Diol from storage (No TDI)	OL	1,754,645
7e	Additive(s) to reactor (No TDI)	OL	1,892
7f	TDI to reactor	OL	529,919
7g	Diol to reactor (No TDI)	OL	1,754,645
7h	Reaction mix to hold tank	OL	2,286,456

¹Use the following codes to designate the physical state for each process stream:

GC = Gas (condensable at ambient temperature and pressure)
 GU = Gas (uncondensable at ambient temperature and pressure)
 SO = Solid
 SY = Sludge or slurry
 AL = Aqueous liquid
 OL = Organic liquid
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

☒ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds ¹	Concentrations ^{2,3} (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
7a	TDI	100	None	0
7b	Various Diols	100	None	0
7c	TDI	100	None	0

7.06 continued below

☒ Mark (X) this box if you attach a continuation sheet.

7.06 (continued)

¹For each additive package introduced into a process stream, specify the compounds that are present in each additive package, and the concentration of each component. Assign an additive package number to each additive package and list this number in column b. (Refer to the instructions for further explanation and an example. Refer to the glossary for the definition of additive package.)

Additive Package Number	Components of Additive Package	Concentrations (% or ppm)
<u>1</u>	<u>Reaction Control Agent</u> <u>(Benzoyl Chloride)</u>	<u>0 to 0.18 (E) (W)</u>
<u>2</u>	<u>Curing Aid (TDI)</u>	<u>0 to 3.2 (E) (W)</u>
	<u>Stabilizer (Benzoyl Chloride)</u>	<u>0 to 0.02(E) (W)</u>
	<u>Stabilizer (Epoxides)</u>	<u>0 to 0.1 (E) (W)</u>
	<u>DeGassing Agent (SAG-47)</u>	<u>0 to 0.02 (E) (W)</u>

²Use the following codes to designate how the concentration was determined:

A = Analytical result
E = Engineering judgement/calculation

³Use the following codes to designate how the concentration was measured:

V = Volume
W = Weight

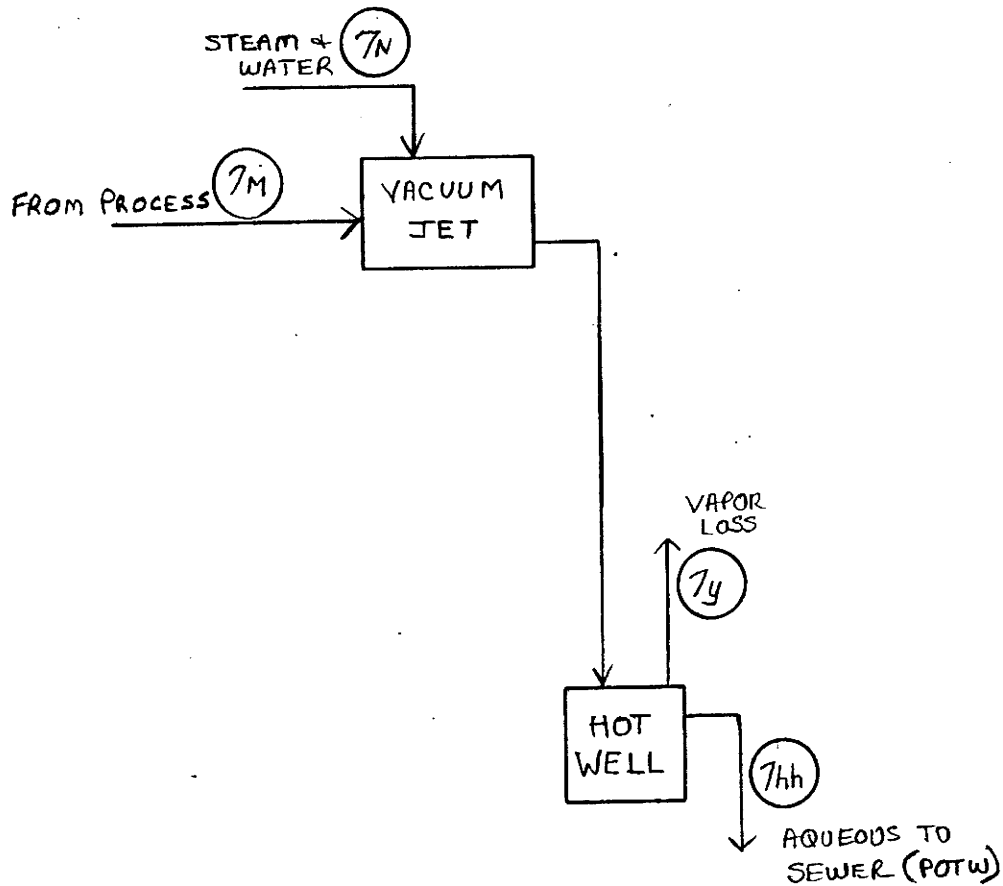
☐ Mark (X) this box if you attach a continuation sheet.

PART A RESIDUAL TREATMENT PROCESS DESCRIPTION

8.01 In accordance with the instructions, provide a residual treatment block flow diagram which describes the treatment process used for residuals identified in question 7.01.

CBI

☐ Process type POLYURETHANE ADDITION POLYMERIZATION



☐ Mark (X) this box if you attach a continuation sheet.

PART B RESIDUAL GENERATION AND CHARACTERIZATION

8.05 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

☐ Process type Polyurethane Addition Polymerization

a.	b.	c.	d.	e.	f.	g.
Stream ID Code	Type of Hazardous Waste ¹	Physical State of Residual ²	Known Compounds ³	Concentrations (% or ppm) ^{4,5,6}	Other Expected Compounds	Estimated Concentrations (% or ppm)
7m	T	GC	TDI*	100% (E) (W)	NA	NA
7N	NOT APPLICABLE	AL(7.0)	WATER	100% (E) (W)	NA	NA
7y	NOT APPLICABLE	GU	WATER	100% (E) (W)	NA	NA
7hh	NOT APPLICABLE	AL(7.0)	WATER	> 99% (E) (W)	NA	NA
			UREAS	< 1% (E) (W)		

8.05 continued below *Toluenediisocyanate

☐ Mark (X) this box if you attach a continuation sheet.

8.05 (continued)

¹Use the following codes to designate the type of hazardous waste:

I = Ignitable
C = Corrosive
R = Reactive
E = EP toxic
T = Toxic
H = Acutely hazardous

²Use the following codes to designate the physical state of the residual:

GC = Gas (condensable at ambient temperature and pressure)
GU = Gas (uncondensable at ambient temperature and pressure)
SO = Solid
SY = Sludge or slurry
AL = Aqueous liquid
OL = Organic liquid
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

8.05 continued below

☐ Mark (X) this box if you attach a continuation sheet.

8.05 (continued) Not applicable - No additive packages are introduced to residual treatment block flow diagram.

³For each additive package introduced into a process stream, specify the compounds that are present in each additive package, and the concentration of each component. Assign an additive package number to each additive package and list this number in column d. (Refer to the instructions for further explanation and an example. Refer to the glossary for the definition of additive package.)

<u>Additive Package Number</u>	<u>Components of Additive Package</u>	<u>Concentrations (% or ppm)</u>
<u>1</u>		
<u>2</u>		
<u>3</u>		
<u>4</u>		
<u>5</u>		

⁴Use the following codes to designate how the concentration was determined:

A = Analytical result

E = Engineering judgement/calculation

8.05 continued below

☐ Mark (X) this box if you attach a continuation sheet.

8.05 (continued)

⁵Use the following codes to designate how the concentration was measured:

V = Volume

W = Weight

⁶Specify the analytical test methods used and their detection limits in the table below. Assign a code to each test method used and list those codes in column e.

<u>Code</u>	<u>Method</u>	<u>Detection Limit</u> <u>(± ug/l)</u>
<u>1</u>	<hr/>	<hr/>
<u>2</u>	<hr/>	<hr/>
<u>3</u>	<hr/>	<hr/>
<u>4</u>	<hr/>	<hr/>
<u>5</u>	<hr/>	<hr/>
<u>6</u>	<hr/>	<hr/>

☐ Mark (X) this box if you attach a continuation sheet.

8.06 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

CBI

☐ Process type Polyurethane Addition Polymerization

a.	b.	c.	d.	e.		f.	g.
Stream ID Code	Waste Description Code ¹	Management Method Code ²	Residual Quantities (kg/yr)	Management of Residual (%)		Costs for Off-Site Management (per kg)	Changes in Management Methods
				On-Site	Off-Site		
<u>7m</u>	<u>NA air emission</u>	<u>M 5c</u>	<u>4,652</u>	<u>100</u>	<u>0</u>	<u>0</u>	<u>None</u>
		<u>hotwell</u>					
<u>7n</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>		<u>N/A</u>	<u>N/A</u>
<u>7y</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>		<u>N/A</u>	<u>N/A</u>
<u>7hh</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>		<u>N/A</u>	<u>N/A</u>

¹Use the codes provided in Exhibit 8-1 to designate the waste descriptions

²Use the codes provided in Exhibit 8-2 to designate the management methods

☐ Mark (X) this box if you attach a continuation sheet.

8.22 Describe the combustion chamber design parameters for each of the three largest (by capacity) incinerators that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s).

☐

<u>Incinerator</u>	<u>Combustion Chamber Temperature (°C)</u>		<u>Location of Temperature Monitor</u>		<u>Residence Time In Combustion Chamber (seconds)</u>	
	<u>Primary</u>	<u>Secondary</u>	<u>Primary</u>	<u>Secondary</u>	<u>Primary</u>	<u>Secondary</u>
<u>1</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>2</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>3</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes 1

No 2

8.23 Complete the following table for the three largest (by capacity) incinerators that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s).

☐ - NOT APPLICABLE -

<u>Incinerator</u>	<u>Air Pollution Control Device¹</u>	<u>Types of Emissions Data Available</u>
<u>1</u>	<u> </u>	<u> </u>
<u>2</u>	<u> </u>	<u> </u>
<u>3</u>	<u> </u>	<u> </u>

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes 1

No 2

¹Use the following codes to designate the air pollution control device:

S = Scrubber (include type of scrubber in parenthesis)

E = Electrostatic precipitator

O = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

PART A EMPLOYMENT AND POTENTIAL EXPOSURE PROFILE

9.01 Mark (X) the appropriate column to indicate whether your company maintains records on the following data elements for hourly and salaried workers. Specify for each data element the year in which you began maintaining records and the number of years the records for that data element are maintained. (Refer to the instructions for further explanation and an example.)

☐ CBI

Data Element	Data are Maintained for:		Year in Which Data Collection Began	Number of Years Records Are Maintained
	Hourly Workers	Salaried Workers		
Date of hire	X	X	1915	25
Age at hire	X	X	1915	25
Work history of individual before employment at your facility	X	X	1915	25
Sex	X	X	1915	25
Race	X	X	1915	25
Job titles	X	X	1915	25
Start date for each job title	X	X	1915	25
End date for each job title	X	X	1915	25
Work area industrial hygiene monitoring data	X	X	1979	30
Personal employee monitoring data	X	X	1979	30
Employee medical history	X	X	1915	30
Employee smoking history	X	X	1915	30
Accident history	X	X	1915	10
Retirement date	X	X	1915	25
Termination date	X	X	1915	25
Vital status of retirees	X	X	1915	25
Cause of death data	X	X	1915	25

☐ Mark (X) this box if you attach a continuation sheet.

9.02 In accordance with the instructions, complete the following table for each activity in which you engage.

CBI

☐

a.	b.	c.	d.	e.
<u>Activity</u>	<u>Process Category</u>	<u>Yearly Quantity (kg)</u>	<u>Total Workers</u>	<u>Total Worker-Hours</u>
Manufacture of the listed substance	Enclosed	NA	NA	NA
	Controlled Release	NA	NA	NA
	Open	NA	NA	NA
On-site use as reactant	Enclosed	NA	NA	NA
	Controlled Release	529,919.1	36	26,864
	Open	NA	NA	NA
On-site use as nonreactant	Enclosed	NA	NA	NA
	Controlled Release	NA	NA	NA
	Open	NA	NA	NA
On-site preparation of products	Enclosed	NA	NA	NA
	Controlled Release	NA	NA	NA
	Open	NA	NA	NA

☐ Mark (X) this box if you attach a continuation sheet.

9.03 Provide a descriptive job title for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance.

CBI

☐

Labor Category

Descriptive Job Title

A

PROCESS OPERATOR

B

PACKER

C

QUALITY CONTROL ANALYST

D

E

F

G

H

I

J

☐ Mark (X) this box if you attach a continuation sheet.

9.04 In accordance with the instructions, provide your process block flow diagram(s) and indicate associated work areas.

CBI

☐ Process type Polyurethane Addition Polymerization.

See attached Process Block Flow Diagram

☒ Mark (X) this box if you attach a continuation sheet.

9.05 Describe the various work area(s) shown in question 9.04 that encompass workers who may potentially come in contact with or be exposed to the listed substance. Add any additional areas not shown in the process block flow diagram in question 7.01 or 7.02. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type Polyurethane Addition Polymerization

Work Area ID

Description of Work Areas and Worker Activities

- | | |
|----|--|
| 1 | B85-Outside building. Bay 15S (Worker connects & disconnects lines that run from delivery truck to storage tank, oper. samples storage tank) |
| 2 | B-85-first floor, bays 13&14 (packer packs & samples product, operator packs TDI-R30, oper. or packer removes & cleans filter screens) |
| 3 | B-85 Second Floor, Bays 13 & 14 (Operator samples product after stripping process) |
| 4 | B-85 Third Floor, bays 12, 13 & 14 (Operator samples product, operator manually changes TDI-R30 drum when empty.) |
| 5 | B-85 Fourth Floor, - Bays 13 & 14 (stripping process. No worker exposure) |
| 6 | B-101-Quality Control Lab. (Analyst uses wet chemistry and instrumentation to analyze samples.) |
| 7 | B-4 Quality Control Lab. (Analyst uses wet chemistry and instrumentation to analyze samples.) |
| 8 | |
| 9 | |
| 10 | |

☐ Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Polyurethane Addition Polymerization

Work area 1

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance ¹	Average Length of Exposure Per Day ²	Number of Days per Year Exposed
A or B	1	inhalation	GU	D	28
A or B	1	inhalation	GU	A	92

¹Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)
 GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)
 SO = Solid

SY = Sludge or slurry
 AL = Aqueous liquid
 OL = Organic liquid
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

²Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
 B = Greater than 15 minutes, but not exceeding 1 hour
 C = Greater than one hour, but not exceeding 2 hours

D = Greater than 2 hours, but not exceeding 4 hours
 E = Greater than 4 hours, but not exceeding 8 hours
 F = Greater than 8 hours

☐ Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Polyurethane Addition Polymerization

Work area 2

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance ¹	Average Length of Exposure Per Day ²	Number of Days per Year Exposed
A	1	inhalation	GU	A	322
A or B	1	inhalation	GU	E	322
A or B	1	inhalation	GU	A	322

¹Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)
 GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)
 SO = Solid

SY = Sludge or slurry
 AL = Aqueous liquid
 OL = Organic liquid
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

²Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
 B = Greater than 15 minutes, but not exceeding 1 hour
 C = Greater than one hour, but not exceeding 2 hours

D = Greater than 2 hours, but not exceeding 4 hours
 E = Greater than 4 hours, but not exceeding 8 hours
 F = Greater than 8 hours

☐ Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Polyurethane Addition Polymerization

Work area 3

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance ¹	Average Length of Exposure Per Day ²	Number of Days per Year Exposed
A	1	inhalation	GU	A	322

¹Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)
 GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)
 SO = Solid

SY = Sludge or slurry
 AL = Aqueous liquid
 OL = Organic liquid
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

²Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
 B = Greater than 15 minutes, but not exceeding 1 hour
 C = Greater than one hour, but not exceeding 2 hours

D = Greater than 2 hours, but not exceeding 4 hours
 E = Greater than 4 hours, but not exceeding 8 hours
 F = Greater than 8 hours

☐ Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Polyurethane Addition Polymerization

Work area 4

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance ¹	Average Length of Exposure Per Day ²	Number of Days per Year Exposed
A	1	inhalation	GU	A	322
A or B	2	inhalation	GU	B	12

¹Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)
 GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)
 SO = Solid

SY = Sludge or slurry
 AL = Aqueous liquid
 OL = Organic liquid
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

²Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
 B = Greater than 15 minutes, but not exceeding 1 hour
 C = Greater than one hour, but not exceeding 2 hours

D = Greater than 2 hours, but not exceeding 4 hours
 E = Greater than 4 hours, but not exceeding 8 hours
 F = Greater than 8 hours

☐ Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Polyurethane Addition Polymerization

Work area 6

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance ¹	Average Length of Exposure Per Day ²	Number of Days per Year Exposed
C	1	inhalation	GU	A	322

¹Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)
 GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)
 SO = Solid

SY = Sludge or slurry
 AL = Aqueous liquid
 OL = Organic liquid
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

²Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
 B = Greater than 15 minutes, but not exceeding 1 hour
 C = Greater than one hour, but not exceeding 2 hours

D = Greater than 2 hours, but not exceeding 4 hours
 E = Greater than 4 hours, but not exceeding 8 hours
 F = Greater than 8 hours

☐ Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Polyurethane Addition Polymerization

Work area 7

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance ¹	Average Length of Exposure Per Day ²	Number of Days per Year Exposed
C	1	inhalation	GU	B	92
C	1	inhalation	GU	A	322

¹Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)	SY = Sludge or slurry
GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)	AL = Aqueous liquid
SO = Solid	OL = Organic liquid
	IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

²Use the following codes to designate average length of exposure per day:

A = 15 minutes or less	D = Greater than 2 hours, but not exceeding 4 hours
B = Greater than 15 minutes, but not exceeding 1 hour	E = Greater than 4 hours, but not exceeding 8 hours
C = Greater than one hour, but not exceeding 2 hours	F = Greater than 8 hours

☐ Mark (X) this box if you attach a continuation sheet.

CBI

Work area 2

[illegible]

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PART B WORK PLACE MONITORING PROGRAM

9.08 If you monitor worker exposure to the listed substance, complete the following table.

CBI

☐

<u>Sample/Test</u>	<u>Work Area ID</u>	<u>Testing Frequency (per year)</u>	<u>Number of Samples (per test)</u>	<u>Who Samples¹</u>	<u>Analyzed In-House (Y/N)</u>	<u>Number of Years Records Maintained</u>
Personal breathing zone	2	1	1	A	N	30
General work area (air)	2	1	1	A	N	30
Wipe samples	NA	NA	NA	NA	NA	NA
Adhesive patches	NA	NA	NA	NA	NA	NA
Blood samples	NA	NA	NA	NA	NA	NA
Urine samples	NA	NA	NA	NA	NA	NA
Respiratory samples	NA	NA	NA	NA	NA	NA
Allergy tests	NA	NA	NA	NA	NA	NA
Other (specify) Continuous air monitor with alarm	2,3,4,5	365	continuous air sample	D	Y	0
Other (specify)						
Other (specify)						

¹Use the following codes to designate who takes the monitoring samples:

A = Plant industrial hygienist

B = Insurance carrier

C = OSHA consultant

D = Other (specify) Air monitor runs continuously.

☐ Mark (X) this box if you attach a continuation sheet.

9.09 For each sample type identified in question 9.08, describe the type of sampling and CBI analytical methodology used for each type of sample.

<input type="checkbox"/> Sample Type	Sampling and Analytical Methodology
Personal Breathing zone	Personal air monitoring pump and glass fiber filter treated with 1-(2-pyridyl)-piperazine sampling and analyzed by liquid chromatography.
Other=continuous air monitor with alarm	Continuous air monitor with colorometric analysis of moving paper tape
General work area	Air monitoring pump and glass fiber filter treated with 1-(2-pyridyl)-piperazine and sampling and analyzed by liquid chromatography

9.10 If you conduct personal and/or ambient air monitoring for the listed substance, specify the following information for each equipment type used.

CBI

<input type="checkbox"/> Equipment Type ¹	Detection Limit ² (depends on the volume sample of air) A	Manufacturer	Averaging Time (hr)	Model Number
D		Filters(Millipore) Pump(Gilian)	1/4 HR.	HFS-113A
E	0.01A	MDA Scientific, Inc.	24hr.continuous monitoring	7000

¹Use the following codes to designate personal air monitoring equipment types:

A = Passive dosimeter

B = Detector tube

C = Charcoal filtration tube with pump

D = Other (specify) Glass fiber filter treated with 1-(2-pyridyl)-piperazine with

Use the following codes to designate ambient air monitoring equipment types: Gilian pump.

E = Stationary monitors located within work area

F = Stationary monitors located within facility

G = Stationary monitors located at plant boundary

H = Mobile monitoring equipment (specify) _____

I = Other (specify) _____

²Use the following codes to designate detection limit units:

A = ppm

B = Fibers/cubic centimeter (f/cc)

C = Micrograms/cubic meter (μ/m³)

☐ Mark (X) this box if you attach a continuation sheet.

9.11 If you conduct routine medical tests for monitoring the health effects of exposure to the listed substance, specify the type and frequency of the tests.

CBI

☐

Test Description

Frequency
(weekly, monthly, yearly, etc.)

SPIROMETRY - lung function ksts

- Yearly for people 40 yrs. & older

- Every other year for people under
under 40 yrs. old.

☐ Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Polyurethane Addition Polymerization

Work area 1

<u>Engineering Controls</u>	<u>Used (Y/N)</u>	<u>Year Installed</u>	<u>Upgraded (Y/N)</u>	<u>Year Upgraded</u>
Ventilation:				
Local exhaust	N	NA	NA	NA
General dilution	N	NA	NA	NA
Other (specify)				
Vessel emission controls	Y	1986	N	NA
Mechanical loading or packaging equipment	N	NA	NA	NA
Other (specify)				

☐ Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Polyurethane Addition Polymerization

Work area 2

<u>Engineering Controls</u>	<u>Used (Y/N)</u>	<u>Year Installed</u>	<u>Upgraded (Y/N)</u>	<u>Year Upgraded</u>
Ventilation:				
Local exhaust	<u>Y</u>	<u>1967</u>	<u>N</u>	<u>NA</u>
General dilution	<u>N</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Other (specify) _____	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Vessel emission controls	<u>N</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Mechanical loading or packaging equipment	<u>Y</u>	<u>1967</u>	<u>N</u>	<u>NA</u>
Other (specify) _____	<u> </u>	<u> </u>	<u> </u>	<u> </u>

☐ Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Polyurethane Addition Polymerization

Work area 3

<u>Engineering Controls</u>	<u>Used (Y/N)</u>	<u>Year Installed</u>	<u>Upgraded (Y/N)</u>	<u>Year Upgraded</u>
Ventilation:				
Local exhaust	<u>Y</u>	<u>1967</u>	<u>N</u>	<u>NA</u>
General dilution	<u>N</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Other (specify) _____	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Vessel emission controls	<u>Y</u>	<u>1967</u>	<u>N</u>	<u>NA</u>
Mechanical loading or packaging equipment	<u>Y</u>	<u>1967</u>	<u>N</u>	<u>NA</u>
Other (specify) _____	<u> </u>	<u> </u>	<u> </u>	<u> </u>

☐ Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Polyurethane Addition Polymerization

Work area 4

<u>Engineering Controls</u>	<u>Used (Y/N)</u>	<u>Year Installed</u>	<u>Upgraded (Y/N)</u>	<u>Year Upgraded</u>
Ventilation:				
Local exhaust	<u>Y</u>	<u>1967</u>	<u>N</u>	<u>NA</u>
General dilution	<u>N</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Other (specify) _____	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Vessel emission controls	<u>Y</u>	<u>1967</u>	<u>N</u>	<u>NA</u>
Mechanical loading or packaging equipment	<u>Y</u>	<u>1967</u>	<u>N</u>	<u>NA</u>
Other (specify) _____	<u> </u>	<u> </u>	<u> </u>	<u> </u>

☐ Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Polyurethane Addition Polymerization

Work area 6

<u>Engineering Controls</u>	<u>Used (Y/N)</u>	<u>Year Installed</u>	<u>Upgraded (Y/N)</u>	<u>Year Upgraded</u>
Ventilation:				
Local exhaust	<u>Y</u>	<u>1983</u>	<u>N</u>	<u>NA</u>
General dilution	<u>Y</u>	<u>1983</u>	<u>N</u>	<u>NA</u>
Other (specify) _____	_____	_____	_____	_____
Vessel emission controls	<u>N</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Mechanical loading or packaging equipment	<u>N</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Other (specify) _____	_____	_____	_____	_____

☐ Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Polyurethane Addition Polymerization

Work area 7

<u>Engineering Controls</u>	<u>Used (Y/N)</u>	<u>Year Installed</u>	<u>Upgraded (Y/N)</u>	<u>Year Upgraded</u>
Ventilation:				
Local exhaust	<u>Y</u>	<u>1965</u>	<u>Y</u>	<u>1983</u>
General dilution	<u>N</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Other (specify) _____	<u>N</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Vessel emission controls	<u>N</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Mechanical loading or packaging equipment	_____	_____	_____	_____
Other (specify) _____	_____	_____	_____	_____

☐ Mark (X) this box if you attach a continuation sheet.

9.13 Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Polyurethane Addition Polymerization

Work area ALL WORK AREAS

Equipment or Process Modification	(1, 2, 3, 4, 5, 6, 7) Reduction in Worker Exposure Per Year (%)
-----------------------------------	---

- NOT APPLICABLE -	- NOT APPLICABLE -

☐ Mark (X) this box if you attach a continuation sheet.

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

[] Process type Polyurethane Additional Polymerization

Work area	1	(Worker connects/ (disconnects truck & tank
-----------------	---	---

<u>Equipment Types</u>	<u>Wear or Use (Y/N)</u>
Respirators	Y
Safety goggles/glasses	N
Face shields	N
Coveralls	N
Bib aprons	N
Chemical-resistant gloves	Y
Other (specify)	
<u>2-piece vinyl suit</u>	<u>Y</u>

100

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[] Process type Polyurethane Addition Polymerization

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Process type ..... 1
Work area ..... 1 {Worker samples
                    { storage tank.

```

<u>Equipment Types</u>	<u>Wear or Use (Y/N)</u>
Respirators	Y
Safety goggles/glasses	N
Face shields	N
Coveralls	N
Bib aprons	N
Chemical-resistant gloves	Y
Other (specify)	
Hard Hat	Y

☐ Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Polyurethane Addition Polymerization

Process type	2	(Operator packs
Work area	2	TDI-R30

<u>Equipment Types</u>	<u>Wear or Use (Y/N)</u>
Respirators	Y
Safety goggles/glasses	N
Face shields	N
Coveralls	N
Bib aprons	N
Chemical-resistant gloves	Y
Other (specify)	
<u>2-piece vinyl rainsuit</u>	Y

☐ Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[] Process type Polyurethane Addition Polymerization
Work area 2 (Packer packs & samples product.

<u>Equipment Types</u>	<u>Wear or Use (Y/N)</u>
Respirators	N
Safety goggles/glasses	Y
Face shields	N
Coveralls	N
Bib aprons	N
Chemical-resistant gloves	Y
Other (specify)	
<u>HARD HAT</u>	<u>Y</u>

☐ Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Polyurethane Addition Polymerization
Work area 2 (Operator or packer
(cleans filter
screen.

<u>Equipment Types</u>	<u>Wear or</u> <u>Use</u> <u>(Y/N)</u>
Respirators	<u>Y</u>
Safety goggles/glasses	<u>N</u>
Face shields	<u>N</u>
Coveralls	<u>N</u>
Bib aprons	<u>N</u>
Chemical-resistant gloves	<u>Y</u>
Other (specify)	
<u>HARD HAT</u>	<u>Y</u>
<u></u>	<u></u>

☐ Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[] Process type Polyurethane Addition Polymerization

Work area 3

<u>Equipment Types</u>	<u>Wear or Use (Y/N)</u>
Respirators	N
Safety goggles/glasses	Y
Face shields	N
Coveralls	N
Bib aprons	N
Chemical-resistant gloves	Y
Other (specify)	
<u>HARD HAT</u>	<u>Y</u>

☐ Mark (X) this box if you attach a continuation sheet.

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

[] Process type Polyurethane Addition Polymerization
 Work area 4 (Operator samples product.)

<u>Equipment Types</u>	<u>Wear or Use (Y/N)</u>
Respirators	N
Safety goggles/glasses	Y
Face shields	N
Coveralls	N
Bib aprons	N
Chemical-resistant gloves	Y
Other (specify)	
<u>HARD HAT</u>	<u>Y</u>

100

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

[] Process type Polyurethane Addition Polymerization

Work area 4 {Operator changes
(TDI - R30 drum.)

<u>Equipment Types</u>	<u>Wear or Use (Y/N)</u>
Respirators	Y
Safety goggles/glasses	N
Face shields	N
Coveralls	N
Bib aprons	N
Chemical-resistant gloves	Y
Other (specify)	
<u>HARD HAT</u>	<u>Y</u>

100

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Polyurethane Addition Polymerization

Work area 6

<u>Equipment Types</u>	<u>Wear or Use (Y/N)</u>
Respirators	<u>N</u>
Safety goggles/glasses	<u>Y</u>
Face shields	<u>N</u>
Coveralls	<u>N</u>
Bib aprons	<u>N</u>
Chemical-resistant gloves	<u>N</u>
Other (specify)	
<u>LAB COAT</u>	<u>Y</u>
_____	_____

☐ Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[] Process type Polyurethane Addition Polymerization

Work area 7

<u>Equipment Types</u>	<u>Wear or Use (Y/N)</u>
Respirators	N
Safety goggles/glasses	Y
Face shields	N
Coveralls	N
Bib aprons	N
Chemical-resistant gloves	Y
Other (specify)	
<u>LAB COAT</u>	<u>Y</u>

☐ Mark (X) this box if you attach a continuation sheet.

9.15 If workers use respirators when working with the listed substance, specify for each process type, the work areas where the respirators are used, the type of respirators used, the average usage, whether or not the respirators were fit tested, and the type and frequency of the fit tests. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type Polyurethane Addition Polymerization

Work Area	Respirator Type	Average Usage ¹	Fit Tested (Y/N)	Type of Fit Test ²	Frequency of Fit Tests (per year)
1	Full face, air supplied, positive pressure respirator	E	Y	QL	1
2 ¹	Full face, positive pressure air supplied respirator	A	Y	QL	1
4	Full face air supplied or full face air purifying respirator	C	Y	QL	1
2 ²	Full face air purifying respirator with organic vapor cartridges and dust filters	A	Y	QL	1

¹Use the following codes to designate average usage:

A = Daily
 B = Weekly
 C = Monthly
 D = Once a year
 E = Other (specify) Twice a Month

²Use the following codes to designate the type of fit test:

QL = Qualitative
 QT = Quantitative

2¹ = Operator packs TDI-R30

2² = Operator or packer removes and cleans filters

☐ Mark (X) this box if you attach a continuation sheet.

PART E WORK PRACTICES

- 9.19 Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this question and complete it separately for each process type and work area.

CBI

☐

Process type Polyurethane Addition Polymerization

Work area 1

Area posted with warning signs

Tank truck posted with placards

Health and Safety Hazard Statements appear in operating instructions

Worker training (Hazard communication, respirator protection)

Company supplied clothes and laundering services.

- 9.20 Indicate (X) how often you perform each housekeeping task used to clean up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type Polyurethane Addition Polymerization - See Note

Work area All work areas - (1,2,3,4,5,6,7)

Housekeeping Tasks	Less Than Once Per Day	1-2 Times Per Day	3-4 Times Per Day	More Than 4 Times Per Day
Sweeping	NA	NA	NA	NA
Vacuuming	NA	NA	NA	NA
Water flushing of floors	NA	NA	NA	NA
Other (specify)				

Note: Routine spills do not occur . If a small spill were to occur Hazardous Properties Information sheets contained in all operating instructions where TDI is used contain detailed written instructions regarding the proper procedures for spill clean up. If a large spill were to occur the Bound Brook Emergency Procedures are put into effect. The Emergency Procedures Manual gives in writing, detailed instructions regarding Emergency Response and spill clean up.

☐ Mark (X) this box if you attach a continuation sheet.

PART E WORK PRACTICES

- 9.19 Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this question and complete it separately for each process type and work area.

CBI

☐

Process type Polyurethane Addition Polymerization

Work area 2

Health and Safety Hazard Statements appear in operating instructions.

Continuous air monitoring

Respirator protection and personal protective equipment

Worker Training (Hazard communication and respirator protection.)

Company supplied clothes and laundering service.

- 9.20 Indicate (X) how often you perform each housekeeping task used to clean up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type

Work area

Housekeeping Tasks	Less Than Once Per Day	1-2 Times Per Day	3-4 Times Per Day	More Than 4 Times Per Day
Sweeping				
Vacuuming				
Water flushing of floors				
Other (specify)				

☐ Mark (X) this box if you attach a continuation sheet.

PART E WORK PRACTICES

- 9.19 Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this question and complete it separately for each process type and work area.

CBI

☐

Process type Polyurethane Addition Polymerization

Work area 3

Health and Safety Hazard Statements appear in operating instructions.

Continuous air monitoring

Personal Protective equipment

Worker Training (Hazard Communication, respirator protection.)

Company supplied clothes and laundering service.

- 9.20 Indicate (X) how often you perform each housekeeping task used to clean up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type

Work area

<u>Housekeeping Tasks</u>	<u>Less Than Once Per Day</u>	<u>1-2 Times Per Day</u>	<u>3-4 Times Per Day</u>	<u>More Than 4 Times Per Day</u>
Sweeping	_____	_____	_____	_____
Vacuuming	_____	_____	_____	_____
Water flushing of floors	_____	_____	_____	_____
Other (specify)	_____	_____	_____	_____

☐ Mark (X) this box if you attach a continuation sheet.

PART E WORK PRACTICES

- 9.19 Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this question and complete it separately for each process type and work area.

CBI

☐

Process type Polyurethane Addition Polymerization

Work area 4

Health and Safety Hazard Statement appear in operating instructions

Continuous air monitoring

Respirator protection and personal protective equipment

Worker Training - (Hazard Communication and Respirator Protection)

Company supplied clothes and laundering service.

- 9.20 Indicate (X) how often you perform each housekeeping task used to clean up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type

Work area

Housekeeping Tasks	Less Than Once Per Day	1-2 Times Per Day	3-4 Times Per Day	More Than 4 Times Per Day
Sweeping				
Vacuuming				
Water flushing of floors				
Other (specify)				

☐ Mark (X) this box if you attach a continuation sheet.

PART E WORK PRACTICES

- 9.19 Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this question and complete it separately for each process type and work area.

CBI

☐

Process type Polyurethane Addition Polymerization

Work area 6

Health and Safety Hazard Statements appear in analytical monographs

Personal Protective equipment

Worker Training Sessions (Hazard Communication, respirator Protection)

Company supplied lab coats and laundering service.

- 9.20 Indicate (X) how often you perform each housekeeping task used to clean up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type

Work area

Housekeeping Tasks	Less Than Once Per Day	1-2 Times Per Day	3-4 Times Per Day	More Than 4 Times Per Day
Sweeping				
Vacuuming				
Water flushing of floors				
Other (specify)				

☐ Mark (X) this box if you attach a continuation sheet.

PART E WORK PRACTICES

- 9.19 Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this question and complete it separately for each process type and work area.

CBI

☐

Process type Polyurethane Addition Polymerization

Work area 7

Health and Safety Hazard Statements appear in operating instructions.

Personal Protective equipment.

Worker Training sessions (Hazard communication, respirator protection.)

Company supplied lab coats and laundering services.

- 9.20 Indicate (X) how often you perform each housekeeping task used to clean up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type

Work area

<u>Housekeeping Tasks</u>	<u>Less Than Once Per Day</u>	<u>1-2 Times Per Day</u>	<u>3-4 Times Per Day</u>	<u>More Than 4 Times Per Day</u>
Sweeping	_____	_____	_____	_____
Vacuuming	_____	_____	_____	_____
Water flushing of floors	_____	_____	_____	_____
Other (specify)	_____	_____	_____	_____
_____	_____	_____	_____	_____

☐ Mark (X) this box if you attach a continuation sheet.

9.21 Do you have a written medical action plan for responding to routine or emergency exposure to the listed substance?

Routine exposure

Yes 1

No 2

Emergency exposure

Yes 1

No 2

If yes, where are copies of the plan maintained?

Routine exposure: _____

Emergency exposure: _____

9.22 Do you have a written leak and spill cleanup plan that addresses the listed substance? Circle the appropriate response.

☒ Yes 1

No 2

If yes, where are copies of the plan maintained?

Operators' Desk, Supervisor's
office, Safety Dept., Medical,
emergency vehicles, local police,
fire depts.

Has this plan been coordinated with state or local government response organizations?
Circle the appropriate response.

Yes ☒ 1

No 2

9.23 Who is responsible for monitoring worker safety at your facility? Circle the appropriate response.

Plant safety specialist 1

Insurance carrier 2

OSHA consultant 3

Other (specify) _____ 4

☐ Mark (X) this box if you attach a continuation sheet.

SECTION 10 ENVIRONMENTAL RELEASE

General Instructions:

Complete Part E (questions 10.23-10.35) for each non-routine release involving the listed substance that occurred during the reporting year. Report on all releases that are equal to or greater than the listed substance's reportable quantity value, RQ, unless the release is federally permitted as defined in 42 U.S.C. 9601, or is specifically excluded under the definition of release as defined in 40 CFR 302.3(22). Reportable quantities are codified in 40 CFR Part 302. If the listed substance is not a hazardous substance under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and, thus, does not have an RQ, then report releases that exceed 2,270 kg. If such a substance however, is designated as a CERCLA hazardous substance, then report those releases that are equal to or greater than the RQ. The facility may have answered these questions or similar questions under the Agency's Accidental Release Information Program and may already have this information readily available. Assign a number to each release and use this number throughout this part to identify the release. Releases over more than a 24-hour period are not single releases, i.e., the release of a chemical substance equal to or greater than an RQ must be reported as a separate release for each 24-hour period the release exceeds the RQ.

For questions 10.25-10.35, answer the questions for each release identified in question 10.23. Photocopy these questions and complete them separately for each release.

PART A GENERAL INFORMATION

10.01 Where is your facility located? Circle all appropriate responses.

CBI

- ☐ Industrial area 1
- Urban area 2
- Residential area 3
- Agricultural area 4
- Rural area 5
- Adjacent to a park or a recreational area 6
- Within 1 mile of a navigable waterway 7
- Within 1 mile of a school, university, hospital, or nursing home facility 8
- Within 1 mile of a non-navigable waterway 9
- Other (specify) _____ 10

☐ Mark (X) this box if you attach a continuation sheet.

10.02 Specify the exact location of your facility (from central point where process unit is located) in terms of latitude and longitude or Universal Transverse Mercader (UTM) coordinates.

Latitude 40 ° 33 ' 27 "

Longitude 74 ° 33 ' 24 "

UTM coordinates Zone _____, Northing _____, Easting _____

10.03 If you monitor meteorological conditions in the vicinity of your facility, provide the following information.

Average annual precipitation inches/year

Predominant wind direction

10.04 Indicate the depth to groundwater below your facility.

Depth to groundwater meters

10.05 For each on-site activity listed, indicate (Y/N/NA) all routine releases of the listed substance to the environment. (Refer to the instructions for a definition of CBI Y, N, and NA.)

☐

On-Site Activity	Environmental Release		
	Air	Water	Land
Manufacturing	NA	NA	NA
Importing	NA	NA	NA
Processing	Y	N	N
Otherwise used	NA	NA	NA
Product or residual storage	N	N	N
Disposal	NA	NA	NA
Transport	N	N	N

☐ Mark (X) this box if you attach a continuation sheet.

10.06 Provide the following information for the listed substance and specify the level of precision for each item. (Refer to the instructions for further explanation and an example.)

CBI

☐

Quantity discharged to the air	60.5	kg/yr ± 10 %
Quantity discharged in wastewaters	NA	kg/yr ± 0 %
Quantity managed as other waste in on-site treatment, storage, or disposal units	NA	kg/yr ± 0 %
Quantity managed as other waste in off-site treatment, storage, or disposal units	NA	kg/yr ± 0 %

☐ Mark (X) this box if you attach a continuation sheet.

10.08 Describe the control technologies used to minimize release of the listed substance for each process stream containing the listed substance as identified in your process block or residual treatment block flow diagram(s). Photocopy this question and complete it separately for each process type.

CBI

☐ Process type Polyurethane Addition Polymerization

<u>Stream ID Code</u>	<u>Control Technology</u>	<u>Percent Efficiency</u>
7s	Conservation Vent	20
7t	" "	20
7u	" "	20
7v	" "	20
7z	" "	20
7x	" "	20

☐ Mark (X) this box if you attach a continuation sheet.

PART B RELEASE TO AIR

- 10.09 Point Source Emissions -- Identify each emission point source containing the listed substance in terms of a Stream ID Code as identified in your process block or residual treatment block flow diagram(s), and provide a description of each point source. Do not include raw material and product storage vents, or fugitive emission sources (e.g., equipment leaks). Photocopy this question and complete it separately for each process type.

CBI

☐

Process type Polyurethane Addition Polymerization

Point Source
ID Code

Description of Emission Point Source

7t

TDI Scale tank vent

7u

Prene Reactor vent

7v

Adduct Hold Tank vent

7x

TDI Receiver Vent

7z

Product Receiver vent

☐ Mark (X) this box if you attach a continuation sheet.

☐ Mark (X) this box if you attach a continuation sheet.

10.10 Emission Characteristics -- Characterize the emissions for each Point Source ID Code identified in question 10.09 by completing the following table.

CBI

Point Source ID Code	Physical State ¹	Average Emissions (kg/day)	Frequency ² (days/yr)	Duration ³ (min/day)	Average Emission Factor ⁴	Maximum Emission Rate (kg/min)	Maximum Emission Rate Frequency (events/yr)	Maximum Emission Rate Duration (min/event)
7t	V	.000227	330	15	0.000000055	0.000015	330	15
7u	V	0.0058	330	120	0.0000014	0.000048	330	120
7v	V	0.545	330	30	0.00013	0.00075	330	30
7x	V	0.003	330	420	0.00000073	0.0000071	330	420
7z	V	0.032	330	420	0.0000078	0.000076	330	420

¹Use the following codes to designate physical state at the point of release:

G = Gas; V = Vapor; P = Particulate; A = Aerosol; O = Other (specify) _____

²Frequency of emission at any level of emission

³Duration of emission at any level of emission

⁴Average Emission Factor -- Provide estimated (\pm 25 percent) emission factor (kg of emission per kg of production of listed substance)

10.11 Stack Parameters -- Identify the stack parameters for each Point Source ID Code identified in question 10.09 by completing the following table.

CBI

☐

Point Source ID Code	Stack Height(m)	Stack Inner Diameter (at outlet) (m)	Exhaust Temperature (°C)	Emission Exit Velocity (m/sec)	Building Height(m) ¹	Building Width(m) ²	Vent, Type ³
7t	18	0.025	25	3.95	15	18	H
7u	20	0.025	70	0.577	15	18	H
7v	21	0.025	100	0.42	15	18	H
7x	18	0.051	43	0.93	15	18	H
7z	18	0.051	100	0.045	15	18	H

¹Height of attached or adjacent building

²Width of attached or adjacent building

³Use the following codes to designate vent type:

H = Horizontal

V = Vertical

☐ Mark (X) this box if you attach a continuation sheet.

10.12 If the listed substance is emitted in particulate form, indicate the particle size distribution for each Point Source ID Code identified in question 10.09. Photocopy this question and complete it separately for each emission point source.

CBI

- NOT APPLICABLE -

☐

Point source ID code

Size Range (microns)

Mass Fraction (% ± % precision)

< 1

≥ 1 to < 10

≥ 10 to < 30

≥ 30 to < 50

≥ 50 to < 100

≥ 100 to < 500

≥ 500

Total = 100%

☐ Mark (X) this box if you attach a continuation sheet.

PART C FUGITIVE EMISSIONS

10.13 Equipment Leaks -- Complete the following table by providing the number of equipment types listed which are exposed to the listed substance and which are in service according to the specified weight percent of the listed substance passing through the component. Do this for each process type identified in your process block or residual treatment block flow diagram(s). Do not include equipment types that are not exposed to the listed substance. If this is a batch or intermittently operated process, give an overall percentage of time per year that the process type is exposed to the listed substance. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type Polyurethane Addition Polymerization

Percentage of time per year that the listed substance is exposed to this process type 88 %

Equipment Type	Number of Components in Service by Weight Percent of Listed Substance in Process Stream					Greater than 99%
	Less than 5%	5-10%	11-25%	26-75%	76-99%	
Pump seals ¹						
Packed	NA	NA	NA	NA	NA	NA
Mechanical	2	NA	NA	NA	NA	1
Double mechanical ²	NA	NA	NA	NA	NA	NA
Compressor seals ¹	NA	NA	NA	NA	NA	NA
Flanges	121	NA	NA	NA	NA	40
Valves						
Gas ³	NA	NA	NA	NA	NA	NA
Liquid	22	NA	NA	NA	NA	6
Pressure relief devices ⁴ (Gas or vapor only)	7	NA	NA	NA	NA	2
Sample connections						
Gas	NA	NA	NA	NA	NA	NA
Liquid	3	NA	NA	NA	NA	NA
Open-ended lines ⁵ (e.g., purge, vent)						
Gas	NA	NA	NA	NA	NA	NA
Liquid	NA	NA	NA	NA	NA	NA

¹List the number of pump and compressor seals, rather than the number of pumps or compressors

10.13 continued on next page

☐ Mark (X) this box if you attach a continuation sheet.

10.13 (continued)

²If double mechanical seals are operated with the barrier (B) fluid at a pressure greater than the pump stuffing box pressure and/or equipped with a sensor (S) that will detect failure of the seal system, the barrier fluid system, or both, indicate with a "B" and/or an "S", respectively

³Conditions existing in the valve during normal operation

⁴Report all pressure relief devices in service, including those equipped with control devices

⁵Lines closed during normal operation that would be used during maintenance operations

10.14 Pressure Relief Devices with Controls -- Complete the following table for those pressure relief devices identified in 10.13 to indicate which pressure relief devices in service are controlled. If a pressure relief device is not controlled, enter "None" under column c.

CBI

☐

a. Number of Pressure Relief Devices	b. Percent Chemical in Vessel ¹	c. Control Device	d. Estimated Control Efficiency ²
2	100	NONE	NA
7	< 5	NONE	NA

¹Refer to the table in question 10.13 and record the percent range given under the heading entitled "Number of Components in Service by Weight Percent of Listed Substance" (e.g., <5%, 5-10%, 11-25%, etc.)

²The EPA assigns a control efficiency of 100 percent for equipment leaks controlled with rupture discs under normal operating conditions. The EPA assigns a control efficiency of 98 percent for emissions routed to a flare under normal operating conditions

☐ Mark (X) this box if you attach a continuation sheet.

- 10.15 Equipment Leak Detection -- If a formal leak detection and repair program is in place, complete the following table regarding those leak detection and repair procedures. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type Polyurethane Addition Polymerization

Equipment Type	Leak Detection	Detection Device ¹	Frequency of Leak Detection (per year)	Repairs Initiated (days after detection)	Repairs Completed (days after initiated)
	Concentration (ppm or mg/m ³) Measured at _____ Inches from Source				
Pump seals			Contin.		
Packed	0.02 ppm	FPM	24hr/day	Immediate	Immediate
Mechanical					
Double mechanical	There is a fixed point monitor on each of 4 floors used for ambient monitoring. It is not for any specific piece of equipment but for all the equipment on each floor.				
Compressor seals					
Flanges					
Valves					
Gas					
Liquid					
Pressure relief devices (gas or vapor only)					
Sample connections					
Gas					
Liquid					
Open-ended lines					
Gas					
Liquid					

¹Use the following codes to designate detection device:

POVA = Portable organic vapor analyzer

FPM = Fixed point monitoring

0 = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

☐ Mark (X) this box if you attach a continuation sheet.

- 10.16 Raw Material, Intermediate and Product Storage Emissions - - Complete the following table by providing the information on each liquid raw material, intermediate, and product storage vessel containing the listed substance as identified in your process block or residual treatment block flow diagram(s).

CBI

☐

Vessel Type ¹	Floating Roof Seals ²	Composition of Stored Materials ³	Throughput (liters per year)	Vessel Filling Rate (gpm)	Vessel Filling Duration (min)	Vessel Inner Diameter (m)	Vessel Height (m)	Vessel Volume (l)	Operating Vessel Emission Controls ⁴	Design Flow Rate ⁵	Vent Diameter (cm)	Control Efficiency (%)	Basis for Estimate ⁶
F	NA	100	435,869	33	3490	2.44	4.95	25,435	Cons vent	12CFM	5.08	20	C

¹Use the following codes to designate vessel type:

F = Fixed roof
 CIF = Contact internal floating roof
 NCIF = Noncontact internal floating roof
 EFR = External floating roof
 P = Pressure vessel (indicate pressure rating)
 H = Horizontal
 U = Underground

²Use the following codes to designate floating roof seals:

MS1 = Mechanical shoe, primary
 MS2 = Shoe-mounted secondary
 MS2R = Rim-mounted, secondary
 LM1 = Liquid-mounted resilient filled seal, primary
 LM2 = Rim-mounted shield
 LMW = Weather shield
 VM1 = Vapor mounted resilient filled seal, primary
 VM2 = Rim-mounted secondary
 VMW = Weather shield

³Indicate weight percent of the listed substance. Include the total volatile organic content in parenthesis

⁴Other than floating roofs

⁵Gas/vapor flow rate the emission control device was designed to handle (specify flow rate units)

⁶Use the following codes to designate basis for estimate of control efficiency:

C = Calculations
 S = Sampling

PART E NON-ROUTINE RELEASES

10.23 Indicate the date and time when the release occurred and when the release ceased or was stopped. If there were more than six releases, attach a continuation sheet and list all releases.

- NOT APPLICABLE -

<u>Release</u>	<u>Date Started</u>	<u>Time (am/pm)</u>	<u>Date Stopped</u>	<u>Time (am/pm)</u>
<u>1</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>2</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>3</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>4</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>5</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>6</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

10.24 Specify the weather conditions at the time of each release.

<u>Release</u>	<u>Wind Speed (km/hr)</u>	<u>Wind Direction</u>	<u>Humidity (%)</u>	<u>Temperature (°C)</u>	<u>Precipitation (Y/N)</u>
<u>1</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>2</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>3</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>4</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>5</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>6</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

☐ Mark (X) this box if you attach a continuation sheet.

APPENDIX I: List of Continuation Sheets

Attach continuation sheets for sections of this form and optional information after this page. In column 1, clearly identify the continuation sheet by listing the question number to which it relates. In column 2, enter the inclusive page numbers of the continuation sheet for each question number.

[illegible]

☐ Mark (X) this box if you attach a continuation sheet.

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

BASF

HMIS: H4 F1 R1

PRODUCT NUMBER: 585622

LUPRANATE* T80-Type 2

SECTION I

*Registered Trademark

TRADE NAME: LUPRANATE* T80-Type 2

CHEMICAL NAME: Toluene Diisocyanate

SYNONYMS: TDI; Tolylene Diisocyanate

FORMULA: $\text{CH}_3\text{C}_6\text{H}_4(\text{NCO})_2$

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: 174.16

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
LUPRANATE* T80-Type 2 Contains: 2,4 Toluene Diisocyanate	584-84-9	100 80	Not established 0.005 ppm ACGIH 0.02 ppm STEL, ACGIH 0.02 ppm Ceiling, OSHA
2,6 Toluene Diisocyanate	91-08-7	20	
SARA Title III Sect. 313: Listed. All components are in TSCA inventory.			

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SERVICES

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: 484°F/ N/A

pH: N/A

VAPOR PRESSURE mm Hg @20 C: 0.01

Vapor Density (Air=1): 6.0

SPECIFIC GRAVITY OR BULK DENSITY: 1.22

Freezing Point: 51.8-53.6°F

SOLUBILITY IN WATER: Water Reacts

APPEARANCE: Colorless Liquid

ODOR: Pungent

INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): 270°F TAG Open Cup

AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL)

LOWER: 0.9%

UPPER: 9.5%

EXTINGUISHING
MEDIUM

Use water fog, foam or CO2 extinguishing media.

SPECIAL
FIREFIGHTING
PROCEDURES

Personnel engaged in fighting isocyanate fires must be protected against nitrogen dioxide fumes as well as isocyanate vapors. Firefighters must wear self-contained

UNUSUAL FIRE
AND EXPLOSION
HAZARDS

breathing apparatus and turnout gear. Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300

201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

PRODUCT NUMBER: 585622

LUPRANATE* T80-Type 2

SECTION V - HEALTH DATA**TOXICOLOGICAL TEST DATA:**

LUPRANATE* T80

2,4 Toluene Diisocyanate

Rat, Oral LD50

Mouse, Inhalation LC50

RESULT:Severe eye and skin
irritant, sensitizer

5.8 g/kg.

10 ppm/4H

EFFECTS OF OVEREXPOSURE:

The primary routes of exposure to this material are eye or skin contact, and inhalation.

Inhalation of the vapors causes severe irritation to lungs, and pulmonary edema can occur after a serious vapor exposure. Liquid contact causes serious skin and eye burns. Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing. Preclude from exposure those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization. Recent studies indicate that overexposure may be associated with chronic lung impairment. In a National Toxicology Program (NTP) study, TDI was carcinogenic when given orally to rats and mice at maximum tolerated doses. TDI was not carcinogenic to rats in a two-year inhalation study. Based on the results of the oral study, TDI was included in the NTP Annual Report on Carcinogens.

FIRST AID PROCEDURES:

Existing medical conditions aggravated by exposure to this material:
Pulmonary disorders.

Eyes-Immediately wash eyes with running water for 15 minutes.
Get immediate medical attention.

Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.

Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.

Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA**STABILITY:**

Stable.

CONDITIONS TO AVOID:

Avoid temperatures >40°C for extended periods of time.

CHEMICAL INCOMPATIBILITY:

Basic compounds, caustic soda, tertiaryamines, water

HAZARDOUS DECOMPOSITION PRODUCTS:

TDI vapors, NOx, CO and HCN.

HAZARDOUS POLYMERIZATION:

May occur.

CONDITIONS TO AVOID:

Avoid contamination with moisture and other products that react with isocyanates.

CORROSIVE TO METAL:

No

OXIDIZER:

No

SECTION VII - SPECIAL PROTECTION**RESPIRATORY PROTECTION:**

Approved respirator for transferring operations or escape.
Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION:

Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING:

Rubber gloves, coveralls, boots and rubber apron which must be cleaned after each use.

VENTILATION:

Use local exhaust wherever vapors are generated.

OTHER:

Maintain work area below P.E.L.

PRODUCT NUMBER: 585622

LUPRANATE* T80-Type 2

SECTION VIII - ENVIRONMENTAL DATA**ENVIRONMENTAL TOXICITY DATA:**

Aquatic toxicity rating: TLm 96: 10 ppm-1 ppm.

SPILL AND LEAK PROCEDURES:

LUPRANATE* T80 is a RCRA-regulated product. Wear protective clothing, evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate spill area with a mixture of 90% water, 8% concentrated ammonia and 2% detergent. Dispose of

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100**WASTE DISPOSAL METHOD:**

waste in a RCRA-permitted facility.
Incinerate or landfill in a RCRA-permitted facility.

HAZARDOUS WASTE 40CFR261: Yes**HAZARDOUS WASTE NUMBER:** U 223**CONTAINER DISPOSAL:**

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA**D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)**

Toluene Diisocyanate

**HAZARDOUS SUBSTANCE
(49CFR CERCLA LIST)**

Yes--TDI

REPORTABLE QUANTITY (RQ) 100 lb**D.O.T. HAZARD CLASSIFICATION (CFR172.101-102)****PRIMARY**

Poison B

SECONDARY**D.O.T. LABELS REQUIRED (49CFR172.101-102)**

Poison

**D.O.T. PLACARDS
REQUIRED (CFR172.504)****BULK ONLY**
Poison2078**POISON CONSTITUENT
(49CFR172.203(K))**
TDI**BILL OF LADING DESCRIPTION**

Toluene Diisocyanate-Poison B-UN 2078 RQ 100 lbs.
*** Placarded: POISON ***

CC NO. 190**UN/NA CODE**2078**DATE PREPARED:** 4 / 17 / 88**UPDATED:** 5 / 16 / 88

WHILE BASF CORPORATION BELIEVES THE DATA SET FORTH HEREIN ARE ACCURATE AS OF THE DATE HEREOF, BASF CORPORATION MAKES NO WARRANTY WITH RESPECT THERETO AND EXPRESSLY DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. SUCH DATA ARE OFFERED SOLELY FOR YOUR CONSIDERATION, INVESTIGATION, AND VERIFICATION.

SECTION X - PRODUCT LABEL**LUPRANATE* T80****DANGER: POISON**

HARMFUL IF INHALED.

CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.

IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, rubber gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:

Eyes-Immediately wash eyes with running water for 15 minutes.

Get immediate medical attention.

Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.

Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.

Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a well-ventilated place. Outage of container should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in closed container. Store above 60 F to prevent freezing and isomer separation. If solidified, do not exceed 95 F while thawing to prevent discoloration. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.

CAS No.: 584-84-9; 91-08-7.

Proper Shipping Name: Toluene Diisocyanate, Poison B - UN 2078 RQ

Made in USA.

Polymers

0488

ERIAL SAFETY DATA

MSDS NO. 0459-04
DATE: 02/10/89

PRODUCT IDENTIFICATION	TRADE NAME:	CYANAPRENE® A-9 Urethane Prepolymer
	SYNONYMS:	None
	CHEMICAL FAMILY:	Polyurethane resin
	MOLECULAR FORMULA:	Mixture
	MOLECULAR WGT.:	Mixture

WARNING	WARNING: CONTAINS TOLUENE DIISOCYANATE (TDI) VAPOR EXTREMELY IRRITATING HARMFUL IF INHALED MAY CAUSE ALLERGIC SKIN OR RESPIRATORY REACTION CONTAMINATION OR EXCESSIVE HEAT MAY RESULT IN DANGEROUS PRESSURE
---------	--

CHRONIC HAZARD WARNINGS	CHRONIC TOXICITY HAZARD. CONTAINS TDI WHICH MAY CAUSE RESPIRATORY SYSTEM DAMAGE. TDI CAUSED CANCER IN LABORATORY ANIMAL TESTS.
----------------------------	--

SHA REGULATED COMPONENTS	COMPONENT	CAS. NO.	%	TWA/CEILING	REFERENCE
	Toluene diisocyanate	026471-62-5	0-0.70	0.02 ppm (ceiling) 0.005 ppm	OSHA ACGIH NTP

PHYSICAL HAZARD RATING	Fire	1	Reactivity	FIRE: Material that must be preheated before ignition can occur. HEALTH: Materials which on short exposure could cause serious temporary or residual injury even though prompt medical treatment were given. REACTIVITY: Materials which in themselves are normally stable, but which can become unstable at elevated temperatures and pressures or which may react with water with some release of energy but not violently.
	Health 3			
	Special			

HEALTH HAZARD INFORMATION	EFFECTS OF OVEREXPOSURE:	The estimated acute oral (rat) LD50 and acute dermal (rabbit) LD50 values for this material are greater than 5000 mg/kg and greater than 2000 mg/kg respectively. Acute inhalation exposure may cause allergic respiratory reactions due to TDI but the product as a whole is estimated to have an LC50 greater than 10 mg/liter. Repeated or prolonged dermal contact with this material may cause allergic skin reactions. Toxicology information on regulated components of this product is as follows: Acute overexposure to toluene diisocyanate vapor may cause severe respiratory irritation. Repeated overexposure to low levels may cause
------------------------------	-----------------------------	--

AGENCY PHONE: 201/835-3100

AMERICAN CYANAMID COMPANY, 1 CYANAMID PLAZA, WAYNE, NEW JERSEY 07470

respiratory sensitization and allergic reactions, as well as loss of respiratory volume. Skin exposure to the liquid may cause moderate irritation and allergic skin reactions. It is also an eye irritant. The oral LD50 in the rat is 5.8-6.2 g/kg, and the inhalation LC50 after a 4 hour exposure to toluene diisocyanate vapor in the rat is 14 ppm. In a study by the NTP, TDI was administered by gavage to rats and produced an increase in the number of tumors in these animals. When administered by inhalation, no carcinogenic effects were observed.

FIRST AID:

In case of skin contact, immediately wash affected areas with soap and plenty of water. Remove contaminated clothing and shoes. Obtain medical attention. Destroy or thoroughly clean shoes before reuse. Do not reuse contaminated clothing without laundering.
In case of eye contact, immediately irrigate with plenty of water for 15 minutes. Obtain medical attention if irritation persists.
If vapor of this material is inhaled, remove from exposure. Administer oxygen if there is difficulty in breathing. Give artificial respiration if person is not breathing and continue until normal breathing is established. Obtain medical attention without delay.

EXPOSURE
CONTROL METHODS

Utilize a closed system process where feasible. Where this material is not used in a closed system, good enclosure and local exhaust ventilation should be provided to control exposure. Food, beverages, and tobacco products should not be carried, stored, or consumed where this material is in use. Before eating, drinking, or smoking, wash face and hands with soap and water. Prevent eye and skin contact. Wear the special protective equipment specified below for operations where eye or skin contact can occur. Prevent contamination of skin or clothing when removing protective equipment. Provide eyewash fountain and safety shower in close proximity to points of potential exposure. Where exposures are below the PEL, no respiratory protection is required. Where exposures exceed the PEL, use respirator approved by NIOSH or full protective suit with air supply appropriate for the material and level of exposure. See "GUIDE TO INDUSTRIAL RESPIRATORY PROTECTION"(NIOSH). Shower after completion of workshift. Launder work clothing at end of workshift prior to reuse. Store street clothing separately from work clothing and protective equipment. Work clothing and shoes must not be taken home.
Special protective equipment - To prevent skin contact wear skin protection, such as impervious gloves, apron, workpants, long sleeve workshirt, or disposable coveralls. To prevent eye contact wear eye protection such as chemical splash proof goggles or face shield.

FIRE AND
EXPLOSION
Hazard
Information

FLASH POINT: Not Available

FLAMMABLE LIMITS
(% BY VOL): Not Available

AUTOIGNITION TEMP: Not Available

DECOMPOSITION TEMP: Not Available

FIRE FIGHTING: Use carbon dioxide, dry chemical, water spray or alcohol foam to extinguish fires. If water spray or alcohol foam is used, it should be in large quantities. Water or alcohol foam may react vigorously with hot isocyanate releasing carbon dioxide. Do not reseal contaminated containers since pressure build-up may cause rupture. Use water to keep fire-exposed containers cool. Wear self-contained positive pressure breathing apparatus and full firefighting protective clothing. See Exposure Control Methods for special protective clothing.

REACTIVITY DATA

STABILITY: Stable
CONDITIONS TO AVOID: Reacts vigorously with water at or above its melting point with frothing and liberation of carbon dioxide. Contamination or excessive heat may result in dangerous pressure.

POLYMERIZATION:
CONDITIONS TO AVOID: Will Not Occur
None known

INCOMPATIBLE
MATERIALS: Water, amines, alcohols, acids, oxidizing agents. Do not allow water or other contaminants to get into containers.

HAZARDOUS
DECOMPOSITION
PRODUCTS: Hydrolysis liberates carbon dioxide. Thermal decomposition or combustion may produce carbon monoxide, carbon dioxide, oxides of nitrogen and/or toluene diisocyanate.

PHYSICAL
PROPERTIES

APPEARANCE AND
ODOR: Off-white solid at room temperature; light-amber liquid above 140 F; practically no odor

BOILING POINT: Not Available

MELTING POINT: 104-124 F(40-60 C)

VAPOR PRESSURE: Not Available

SPECIFIC GRAVITY: 1.16 @ 212 F

VAPOR DENSITY: Not Available

% VOLATILE (BY VOL): Not Available

OCTANOL/H₂O
PARTITION COEF.: Not Available

pH: Not Available

SATURATION IN AIR
(BY VOL): Not Available

EVAPORATION RATE: Not Available

SOLUBILITY IN WATER: Negligible

CYANAPRENE® A-9 Urethane Prepolymer

PILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Where exposure level is not known, wear NIOSH approved, positive pressure, self-contained respirator. Where exposure level is known, wear NIOSH approved respirator suitable for level of exposure. In addition to the protective clothing/equipment in Exposure Control Methods, wear impervious boots. Cover spills with some inert absorbent material; sweep up and place in a waste disposal container. Flush area with water.

WASTE DISPOSAL

Disposal must be made in accordance with applicable governmental regulations.

SPECIAL PRECAUTIONS

HANDLING AND STORAGE/OTHER:

Excessive heat (150 C), while in an unvented vessel may result in dangerous build up of pressure. CYANAPRENE Urethane Prepolymers are resins which become very viscous (unpourable) below 20 C and solidify as waxy solids below 0 C. To prepare for unloading, the drum with bung vent inserted, should be placed in a warm room, drum warmer or meltdown oven for a period of time sufficient to melt the desired amount of CYANAPRENE prepolymer. Liquid CYANAPRENE prepolymer can then be removed from the drum by inserting a drum spigot or ball valve in the 2" bung, positioning on a drum tilter, tilting and pouring out required amount. Dry nitrogen (-40 C dewpoint) should be bled into the drum at no pressure to replace the CYANAPRENE prepolymer removed. Cyanaprene prepolymers are heat-sensitive and can be damaged by excessive exposure to heat. To avoid this, refer to product label from total heat exposure instructions. Do not use air pressure or apply heat with open flame to remove contents of drum.

D.O.T. SHIPPING INFORMATION

PROPER SHIPPING NAME:

ORM-A, N.O.S.

HAZARD CLASS:

ORM-A

UN/NA:

NA1693

D.O.T. HAZARDOUS SUBSTANCES:

(Reportable Quantity of Product)
TOLUENE DIISOCYANATE (14,286 lbs-0.7%)

D.O.T. LABEL REQUIRED:

None

TSCA INFORMATION

This product is manufactured in compliance with all provisions of the Toxic Substances Control Act, 15 U.S.C.

ENVIRONMENTAL INFORMATION

The following components are defined as toxic chemicals subject to reporting requirements of Section 313 of Title III and of 40 CFR 372 or subject to other EPA regulations.

COMPONENT	CAS. NO.	%	SARA TITLE III				RCRA	TSCA 12B
			TPQ (lbs.)	RQ (lbs.)	S313			
Toluene diisocyanate	026471-62-5	0-0.70	500	100	YES		U223	NO

PRODUCT CLASSIFICATION UNDER SECTION 311 OF SARA

ACUTE (Y) CHRONIC (Y) FIRE (N) REACTIVE (Y) PRESSURE (N)

Marvin A. Friedman, Ph.D., Director of Toxicology and Product Safety

Information is given without any warranty or representation. We do not assume any legal responsibility for same, nor do we give permission, inducement, or recommendation to practice any patented invention without a license. It is offered solely for your consideration, investigation and verification. Before using any product read its label.

MSDS NO. 4018-02

DATE: 02/13/89

MATERIAL SAFETY DATA

PRODUCT IDENTIFICATION	TRADE NAME:	Toluene Diisocyanate R-30
	SYNONYMS:	TDI
	CHEMICAL FAMILY:	Toluene Diisocyanate
	MOLECULAR FORMULA:	C ₉ H ₆ N ₂ O ₂
	MOLECULAR WGT.:	174.16

WARNING	DANGER! MAY BE FATAL IF INHALED MAY CAUSE ALLERGIC SKIN OR RESPIRATORY REACTION CAUSES EYE IRRITATION CONTAMINATION OR EXCESSIVE HEAT MAY RESULT IN DANGEROUS PRESSURE
----------------	---

CHRONIC HAZARD WARNINGS	CHRONIC TOXICITY HAZARD. CONTAINS TDI WHICH MAY CAUSE RESPIRATORY SYSTEM DAMAGE. TDI CAUSED CANCER IN LABORATORY ANIMAL TESTS.
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OSHA REGULATED COMPONENTS	COMPONENT	CAS. NO.	%	TWA/CEILING	REFERENCE
	2,4-Toluene Diisocyanate	000584-84-9	30-50	0.02 ppm(Ceiling) 0.005 ppm	OSHA ACGIH NTP
	2,6-Toluene Diisocyanate	000091-08-7	50-70	0.02ppm (ceiling) 0.005ppm	OSHA ACGIH NTP

NFPA HAZARD RATING	Fire 1 Health 3 1 Special 1 Reactivity Special	FIRE: Material that must be preheated before ignition can occur. HEALTH: Materials which on short exposure could cause serious temporary or residual injury even though prompt medical treatment were given. REACTIVITY: Materials which in themselves are normally stable, but which can become unstable at elevated temperatures and pressures or which may react with water with some release of energy but not violently.
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HEALTH HAZARD INFORMATION	EFFECTS OF OVEREXPOSURE: Acute overexposure to toluene diisocyanate vapor may cause severe respiratory irritation. Repeated overexposure to low levels may cause respiratory sensitization and allergic reactions, as well as loss of respiratory volume. Skin exposure to the liquid may cause moderate irritation and allergic skin reactions. It is also an eye irritant. The oral LD50 in the rat is 5.8-6.2 g/kg, and the inhalation LC50 after a four hour exposure to toluene diisocyanate vapor in the rat is 14ppm. In a study by the NTP, TDI was administered by gavage to rats and produced an increase in the number
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EMERGENCY PHONE: 201/835-3100**AMERICAN CYANAMID COMPANY, 1 CYANAMID PLAZA, WAYNE, NEW JERSEY 07470**

of tumors in this study. When administered by inhalation no carcinogenic effects were observed.

FIRST AID:

In case of skin contact, immediately wash affected areas with soap and plenty of water. Remove contaminated clothing and shoes. Obtain medical attention. Destroy or thoroughly clean shoes before reuse. Do not reuse contaminated clothing without laundering.

In case of eye contact, immediately irrigate with plenty of water for 15 minutes. Obtain medical attention without delay.

If vapor of this material is inhaled, remove from exposure. Administer oxygen if there is difficulty in breathing. Give artificial respiration if person is not breathing and continue until normal breathing is established. Obtain medical attention without delay.

EXPOSURE
CONTROL METHODS

Where this material is not used in a closed system, good enclosure and local exhaust ventilation should be provided to control exposure. Food, beverages, and tobacco products should not be carried, stored, or consumed where this material is in use. Before eating, drinking, or smoking, wash face and hands with soap and water. Avoid skin contact. Protective clothing such as impervious gloves, apron, workpants, long sleeve work shirt, or disposable coveralls are recommended to prevent skin contact. For operations where eye or face contact can occur, wear eye protection such as chemical splash proof goggles or face shield. Eyewash equipment and safety shower should be provided in areas of potential exposure. Where exposures are below the Permissible Exposure Limit (PEL), no respiratory protection is required. Where exposures exceed the PEL, use respirator approved by NIOSH for the material and level of exposure. See "GUIDE TO INDUSTRIAL RESPIRATORY PROTECTION" (NIOSH).

Shower after completion of workshift. Launder work clothing at end of workshift prior to reuse. Store street clothing separately from work clothing and protective equipment. Work clothing and shoes must not be taken home.

Special protective equipment - To prevent skin contact wear skin protection, such as impervious gloves, apron, workpants, long sleeve workshirt, or disposable coveralls. To prevent eye contact wear eye protection such as chemical splash proof goggles or face shield.

RE AND EXPLOSION HAZARD FORMATION	FLASH POINT: METHOD:	270 F (132 C) Closed Cup
	FLAMMABLE LIMITS (% BY VOL):	Lower - 0.9 Upper - 9.5
	AUTOIGNITION TEMP:	Not Available
	DECOMPOSITION TEMP:	Not Available
	FIRE FIGHTING:	Use carbon dioxide, dry chemical, water spray or alcohol foam to extinguish fires. If water spray or alcohol foam is used, it should be in large quantities. Water or alcohol foam may react vigorously with hot isocyanate releasing carbon dioxide. Do not reseal contaminated containers since pressure build-up may cause rupture. Use water to keep fire-exposed containers cool. Wear self-contained positive pressure breathing apparatus and full firefighting protective clothing. See Exposure Control Methods for special protective clothing.
REACTIVITY DATA	STABILITY:	Stable
	CONDITIONS TO AVOID:	Store in a dry place at temperatures between 65-105 F (18-41 C).
	POLYMERIZATION: CONDITIONS TO AVOID:	May Occur Avoid contact with moisture, strong bases, and other incompatible reactants. Avoid temperatures over 105 F (41 C).
	INCOMPATIBLE MATERIALS:	Water amines, strong bases, alcohols. May corrode copper alloys and aluminum. Reacts with water to form heat, carbon dioxide and insoluble areas.
PHYSICAL PROPERTIES	HAZARDOUS DECOMPOSITION PRODUCTS:	Thermal decomposition or combustion may produce carbon monoxide, carbon dioxide, oxides of nitrogen and/or traces of hydrogen cyanide.
	APPEARANCE AND ODOR:	Clear to pale yellow mobile liquid with pungent odor
	BOILING POINT:	482 F (250 C)
	MELTING POINT:	Not Available
	SPECIFIC GRAVITY:	1.22 @ 25/4C
	VAPOR DENSITY:	6.0
	% VOLATILE (BY VOL):	Negligible
	OCTANOL/H ₂ O PARTITION COEF.:	Not Available
	pH:	Not Available
	SATURATION IN AIR (BY VOL):	Not Available
	EVAPORATION RATE:	Not Available
	SOLUBILITY IN WATER:	Very soluble

SPILL OR LEAK
PROCEDURESSTEPS TO BE TAKEN IN
CASE MATERIAL IS
RELEASED OR SPILLED:

Where exposure level is not known, wear NIOSH approved, positive pressure, self-contained respirator. Where exposure level is known, wear NIOSH approved respirator suitable for level of exposure. In addition to the protective clothing/equipment in Exposure Control Methods, wear impervious boots. Cover spills with some inert absorbent material; sweep up and place in a waste disposal container. Flush area with water.

WASTE DISPOSAL

Disposal must be made in accordance with applicable governmental regulations.

SPECIAL
PRECAUTIONSHANDLING AND
STORAGE/OTHER:

Keep away from source of ignition and protect from exposure to fire and heat. Areas containing this material should have fire-safe practices and electrical equipment in accordance with Electrical and Fire Protection Codes (NFPA-30) governing Class III B Combustible Liquids.

D.O.T. SHIPPING
INFORMATIONPROPER SHIPPING
NAME:

TOLUENE DIISOCYANATE

HAZARD CLASS:

POISON B

UN/NA:

UN2078

D.O.T. HAZARDOUS
SUBSTANCES:

(Reportable Quantity of Product)
TOLUENE DIISOCYANATE (100 lbs-100%)

D.O.T. LABEL REQUIRED:

Poison

TSCA
INFORMATION

This product is manufactured in compliance with all provisions of the Toxic Substances Control Act, 15 U.S.C.

ENVIRONMENTAL
INFORMATION

The following components are defined as toxic chemicals subject to reporting requirements of Section 313 of Title III and of 40 CFR 372 or subject to other EPA regulations.

COMPONENT	CAS. NO.	%	SARA TITLE III			RCRA	TSCA 12B
			TPQ (lbs.)	RQ (lbs.)	S313		
2,4-Toluene Diisocyanate	000584-84-9	30-50	500	100	YES	U223	NO
2,6-Toluene Diisocyanate	000091-08-7	50-70	100	100	YES	U223	NO

PRODUCT CLASSIFICATION UNDER SECTION 311 OF SARA

ACUTE (Y)	CHRONIC (Y)	FIRE (N)	REACTIVE (Y)	PRESSURE (N)
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Marvin A. Friedman, Ph.D., Director of Toxicology and Product Safety

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CYANAPRENE[®] A-9

POLYESTER URETHANE PREPOLYMER

Contains Toluene Diisocyanate (TDI)

WARNING! VAPOR EXTREMELY IRRITATING. HARMFUL IF INHALED. MAY CAUSE ALLERGIC SKIN OR RESPIRATORY REACTION. CONTAMINATION OR EXCESSIVE HEAT MAY RESULT IN DANGEROUS PRESSURE.

Avoid breathing vapor. Avoid prolonged or repeated contact with skin. Use with adequate ventilation. Wash thoroughly after handling. Do not allow water or other liquids to get into container.

FIRST AID: If symptoms occur from inhalation, remove from exposure. Administer oxygen if necessary. Get medical attention. In case of contact, immediately wash skin with soap and plenty of water.

CYANAPRENE[®] Urethane Prepolymers are resins which become very viscous (unpourable) below 20°C and solidify as a waxy solid below 0°C. If solid, heat to 70°C (160°F) and mix thoroughly. Use of a drum roll melter or a warm room are preferred, although a melt down oven may be used for a sufficient period of time to melt the CYANAPRENE prepolymer. To prepare for unloading the drum, with bung vented, insert a drum spigot or ball valve in the 2" bung position on a drum tilter, tilt and pour out required amount. Dry nitrogen (-40°C dewpoint) should be bled into the drum at no pressure to replace the CYANAPRENE prepolymer removed. CYANAPRENE prepolymers are heat sensitive and can be damaged by excessive exposure to heat. To avoid this, total heat exposure should be less than 7 days at 70°C.

ATTENTION

DO NOT USE AIR PRESSURE OR APPLY HEAT WITH OPEN FLAME TO REMOVE CONTENTS OF THIS CONTAINER. AFTER EMPTIED, CONTAINER MAY RETAIN SOLID, LIQUID, AND/OR VAPOR RESIDUES. CONTINUE TO OBSERVE ALL PRECAUTIONS, IF ANY, ON LABEL.
DO NOT CUT, PUNCTURE, TORCH, OR WELD ON OR NEAR THE EMPTIED CONTAINER.
DO NOT USE FOR OTHER PURPOSES.

CUSTOMER HEAT HISTORY CHART OVEN CONDITIONS

DATE	IN	OUT	TEMP.

RECOMMENDED MELTDOWN CONDITIONS

TEMPERATURE 70°C (160°F)

Total Exposure

Time less than 7 days

% NCO _____

LOT NO. _____

DRUM NO. _____

AVG. GR. 546 LBS.

NET 500 LBS.

93183-01

248 kg

226.6 kg

LBL 1327 R19 3/88 LL

PRINTED IN U.S.A.

American Cyanamid Company • Wayne, N.J. 07470

Emergency Phone: 201-835-3100



TOLUENE DIISOCYANATE R-30

(Toluene Diisocyanate)

DANGER! MAY BE FATAL IF INHALED
CAUSES BURNS OF EYES AND SKIN
MAY CAUSE ALLERGIC SKIN AND RESPIRATORY REACTION

Do not breathe vapor.
Do not get in eyes, on skin, on clothing.
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.



FIRST AID: If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen.
Get medical attention.

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse.

AVG. GR. 546 LBS NET 500 LBS
248 KG 226.6 KG

02939-07

DOT: TOLUENE DIISOCYANATE
UN 2078



ATTENTION
DO NOT USE AIR
PRESSURE OR APPLY
HEAT WITH OPEN
FLAME TO REMOVE
CONTENTS OF DRUM.
AFTER EMPTIED, DRUM
MAY RETAIN SOLID,
LIQUID, AND/OR
VAPOR RESIDUES.
CONTINUE TO
OBSERVE ALL
PRECAUTIONS, IF
ANY, ON LABEL.
DO NOT CUT, PUNC-
TURE, TORCH, OR
WELD ON OR NEAR
THE EMPTIED DRUM.
DO NOT USE FOR
OTHER PURPOSES.

DETAILED[illegible]

EQUIPMENT LIST	
	DESCRIPTION
7.1	TDI STORAGE TANK
7.2	POLYESTER STORAGE TANK
7.3	TDI WEIGHT TANK
7.4	POLYESTER WEIGHT TANK
7.5	CYANAPRENE REACTOR
7.6	ADDUCT HOLD TANK
7.7	EVAPORATOR (VOTATOR)
7.8	TDI CONDENSER
7.9	TDI RECOVERED RECEIVER
7.10	4 STAGE VACUUM JET
7.11	PRODUCT RECEIVER
7.12	FILTER
7.13	CLEANING TANK

[illegible]

CAD-000113

The diagram illustrates a complex chemical process flow involving multiple storage tanks, reactors, and recovery units, organized across four levels: 4th FLOOR, 3rd FLOOR, 2nd FLOOR, and 1st FLOOR, with a GRADE level at the bottom.

4th FLOOR: Includes a BUILDING OUTLINE, WATER/STEAM inlet (71d), VACUUM JETS (7.10), CONDENSER (7.8), and HOTWELL. A 4th FLOOR vent is also shown.

3rd FLOOR: Features a STRIPPER (7.7) and a RECOVERY RECEIVER (7.9). It receives input from the 4th floor condenser (7j) and has a 3rd FLOOR vent.

2nd FLOOR: Contains a REACTOR (7.5) and a HOLD TANK (7.6). It receives input from the 3rd floor recovery receiver (7i) and has a 2nd FLOOR vent.

1st FLOOR: Includes a CLEANING TANK (7.13), two PRODUCT RECEIVERS (7.11), and a FILTER (7.12). It receives input from the 2nd floor hold tank (7h) and has a 1st FLOOR vent.

GRADE: The base level of the plant, showing TRUCK UNLOADING, TRUCK HOSE CONN., and various storage tanks (7.2, 7.1).

Process Flow Details:

- Storage Tanks:** Multiple STORAGE TANK 7.2 units are shown on the left. A large STORAGE TANK 7.1 is located on the 2nd floor. A CLEANING TANK 7.13 and FILTER 7.12 are on the 1st floor.
- Reactors and Receivers:** A REACTOR 7.5 is on the 2nd floor. A HOLD TANK 7.6 is on the 2nd floor. A RECOVERY RECEIVER 7.9 is on the 3rd floor. Two PRODUCT RECEIVERS 7.11 are on the 1st floor.
- Strippers and Filters:** A STRIPPER 7.7 is on the 3rd floor. A CLEANING TANK 7.13 and FILTER 7.12 are on the 1st floor.
- Flow Control:** Numerous valves (7a through 7z) and pumps (7u, 7v, 7w, 7x, 7y, 7z) are indicated throughout the system.
- Inputs/Outputs:** TRUCK UNLOADING and TRUCK HOSE CONN. are shown on the left. WATER/STEAM and VACUUM JETS are shown on the right. A SEWER connection is also indicated.

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Process Stream I.D. Code	Process Stream Description	Physical State	Stream Flow (kg/jr.)
7i	Feed to stripper	OL	2,286,456
7j	Volatile from stripper	GC	78,347
7k	Condensed TDI to receiver	OL	73,695
7l	Recovered TDI to drums	OL	73,695
7m	Vapor loss from condenser	OL	4,562
7n	Feed to Vacuum Jets (No TDI)	OL	
7o	Product from stripper	OL	2,208,109
7p	Additive(s) to Product	OL	630
7q	Finished Product (dirty)	OL	2,101,809
7r	Finished Product (filtered)	OL	2,101,809
7s	Vapor Loss	GC	0.106
7t	Vapor Loss	GC	0.052
7u	Vapor Loss	GC	2.490
7v	Vapor Loss	GC	10.682
7w	Vapor Loss (shutdown)	GC	
7x	Vapor Loss (venting)	GC	1.515
7y	Vapor Loss (hot well)	GC	0.0
7z	Vapor Loss	GC	8.193
7aa	Vapor Loss (drumming)	GC	0.649
7bb	Vapor Loss (filter cleaning, no TDI)	GC	118
7cc	Spill Loss	OL	"see footnote"
7dd	Spill Loss (no TDI)	OL/OS	"see footnote"
7ee	Samples/Line drainings	OL	"see footnote"
7ff	Samples/Line drainings	OL	"see footnote"
7gg	Samples	OL	"see footnote"
7hh	Sewered Ureas (hot well)	OL	4652
7ii	Dirty Cleaning Solution	OL	
7jj	Cleaning Solvent	OL	
7kk	Spill Loss	OL	"see footnote"
7ll	Vapor Loss (drumming)	GC	0.043
7mm	Samples/Line drainings	OL	"see footnote"
7nn	Samples/Line drainings	OL	"see footnote"
7oo	Samples/Line drainings	OL	"see footnote"

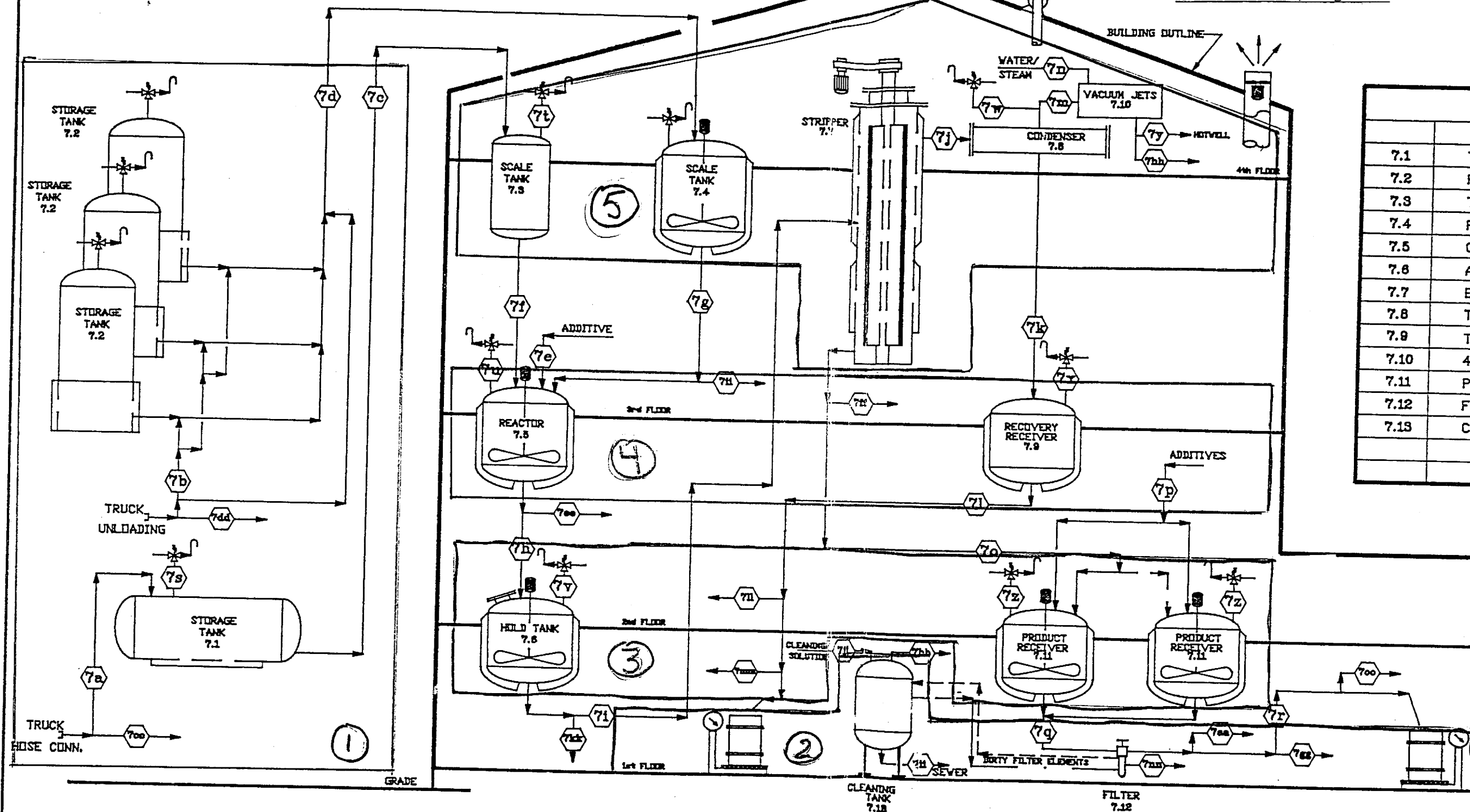
Footnote: Combined stream flows for wastes from stream I.D. Codes 7cc, 7dd, 7ee, 7ff, 7gg, 7kk, 7mm, 7nn and 7oo - totaled 57,232 kg/yr.

Continuation to Question 7.06

Process Stream ID Code	Known Compounds	Conc. %	Other Expected Compounds	Conc. %
7d	Various Diols	100 (E)(W)	None	0
7e	Additive Package #1	N/A	N/A	N/A
7f	TDI	100 (E)(W)	None	0
7g	Various Diols	100 (E)(W)	None	0
7h	TDI	2 to 10 (E)(W)	None	0
	Polyurethane	90 to 98 (E)(W)		
	Benzoyl Chloride	0 to .2 (E)(W)		
7i	TDI	2 to 10 (E)(W)	None	0
	Polyurethane	90 to 98 (E)(W)		
	Benzoyl Chloride	0 to .2 (E)(W)		
7j	TDI	90 to 100 (E)(W)	None	0
	Benzoyl Chloride	0 to 10 (E)(W)		
7k	TDI	90 to 100 (E)(W)	None	0
	Benzoyl Chloride	0 to 10 (E)(W)		
7l	TDI	90 to 100 (E)(W)	None	0
	Benzoyl Chloride	0 to 10 (E)(W)		
7m	TDI	90 to 100 (E)(W)	None	0
	Benzoyl Chloride	0 to 10 (E)(W)		
7n	Steam/Water	100 (E)(W)	None	0
7o	TDI	0 to 1 (E)(W)	None	0
	Polyurethane	99 to 100 (E)(W)		
7p	Additive Package#2	N/A	N/A	N/A
7q	Polyurethane	97 to 100 (E)(W)	None	0
	TDI	0 to 3 (E)(W)		
	Benzoyl Chloride	0 to .01 (E)(W)		
	Epoxides	0 to .1 (E)(W)		
7r	Polyurethane	97 to 100 (E)(W)	None	0
	TDI	0 to 3 (E)(W)		
	Benzoyl Chloride	0 to .01 (E)(W)		
	Epoxides	0 to .1 (E)(W)		

TEAM[illegible][illegible]

7.1	TDI STORAGE TANK
7.2	POLYESTER STORAGE TANK
7.3	TDI WEIGHT TANK
7.4	POLYESTER WEIGHT TANK
7.5	CYANAPRENE REACTOR
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7.8	TDI CONDENSER
7.9	TDI RECOVERED RECEIVER
7.10	4 STAGE VACUUM JET
7.11	PRODUCT RECEIVER
7.12	FILTER
7.13	CLEANING TANK



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B-4
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LEDERLE LABORATORIES DIVISION
AMERICAN CYANAMID COMPANY
BOUND BROOK NEW JERSEY

PROCESS FLOW DIAGRAM

CAD-0000112